The IRON AGE
February 19, 1959 A Chilton Publication The National Metalworking Weekly

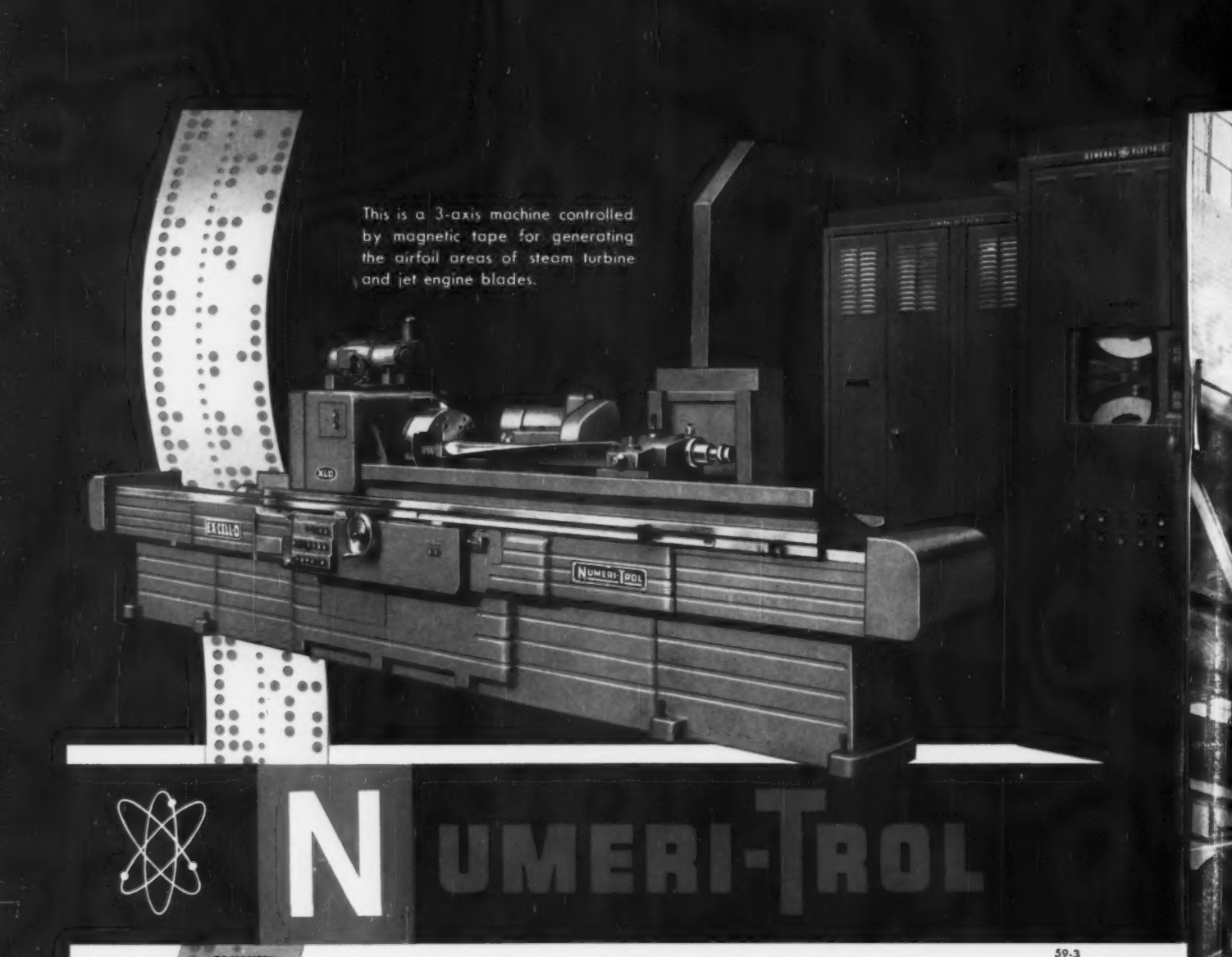
Special Report to Management

Can U. S. Industry Hold Its World Markets? P. 93

Steel and Its Union Battle for Men's Minds – P. 81

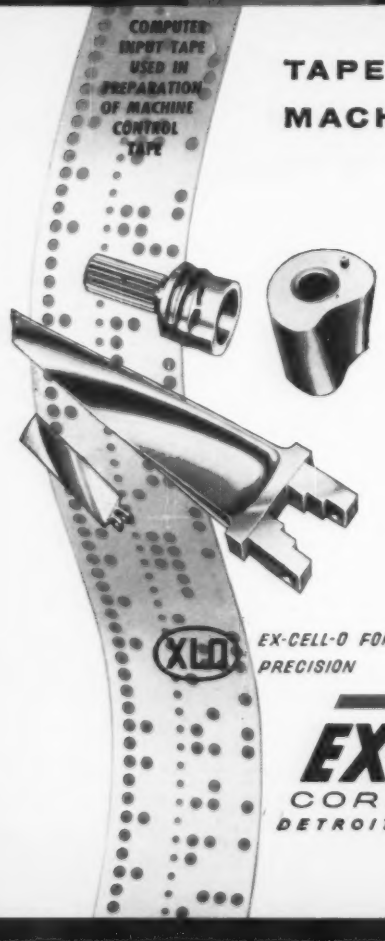
Composite Tubing: Design for High Strength – P. 123

Digest of the Week – P. 2-3


This is a 3-axis machine controlled by magnetic tape for generating the airfoil areas of steam turbine and jet engine blades.
EX-CELL-O
NUMERI-TROL

NUMERI-TROL

59-3



TAPE CONTROLLED PRECISION PROFILING MACHINES BY EX-CELL-O

FIRST to provide 360° work rotation for 3-dimensional machining of complex parts

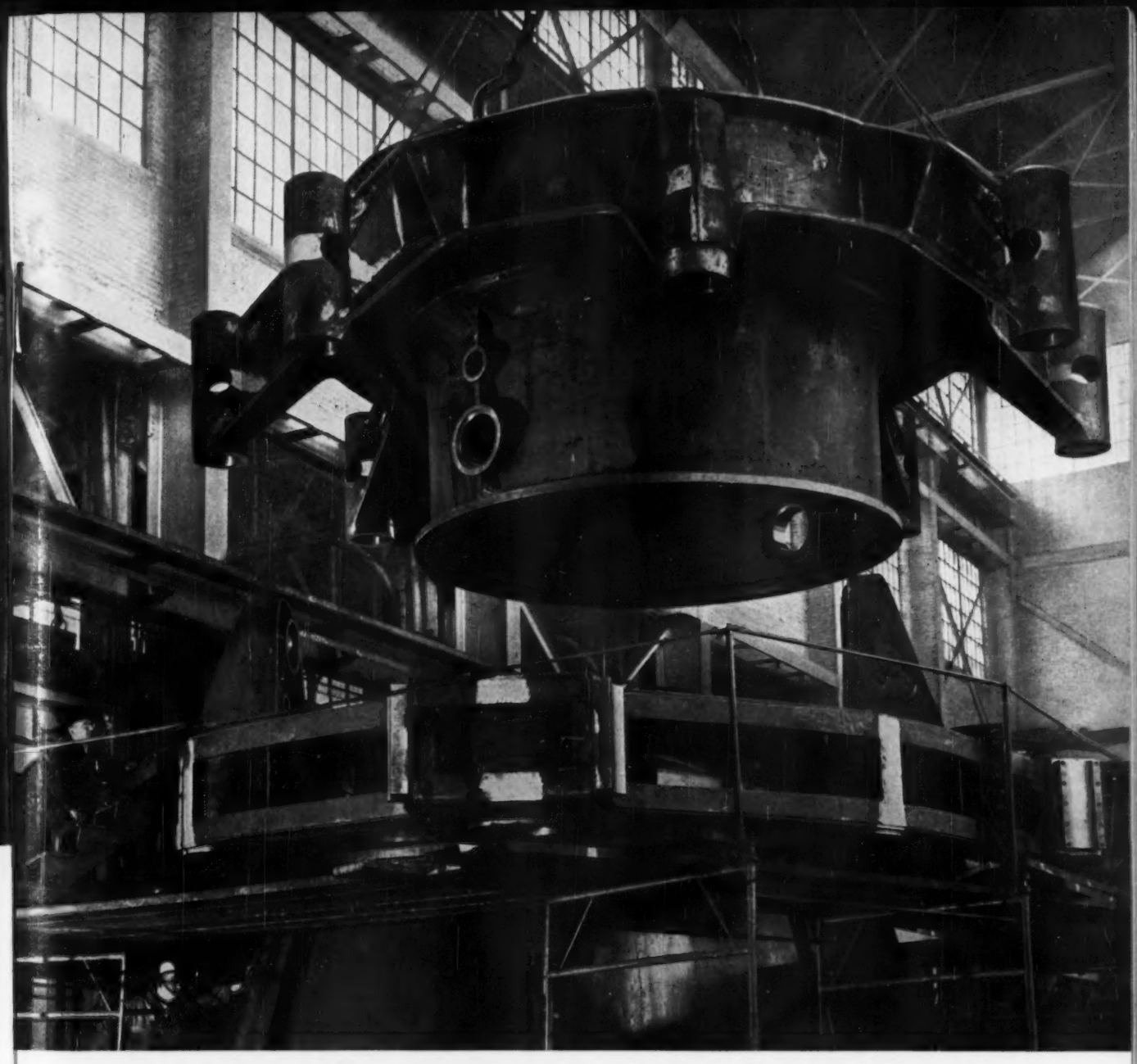
FIRST to combine grinding, dressing and dressing compensation with milling

Numeri-Trol puts a new dimension into machining. Lead time goes down, tooling costs and machining time are cut in production of prototypes and complicated precision parts. Lateral movement of the work head and transverse travel of the cross slide combine with rotary work feed to permit milling and finish grinding impossible or uneconomical by ordinary standards. Wheel dressing and dressing compensation are fully tape-controlled. Numeri-Trol machining includes rotary and longitudinal milling with automatic work feed and 360° indexing.

Have a part that is costing too much to make? Find out how Numeri-Trol can produce it—economically! See your Ex-Cell-O Representative or write direct.

EX-CELL-O CORPORATION *Machinery Division*
DETROIT 32, MICHIGAN

EX-CELL-O PRECISION PRODUCTS INCLUDE: MACHINE TOOLS • GRINDING AND BORING SPINDLES • CUTTING TOOLS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • TORQUE ACTUATORS • THREAD AND GROOVE GAGES • GRANITE SURFACE PLATES • AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT



It simulates a ship in a storm-tossed sea

The machine which you see being put together here in Bethlehem's machine shops might properly be called the Great Imitator. It is a ship-motion simulator with an uncanny ability to reproduce the tossing of an ocean vessel. The simulator can rock and roll, buck and pitch, and otherwise carry on like a ship in heavy swells. It can even imitate a vessel pummeled by a hurricane.

Designed and built for the U. S. Navy by Loewy-Hydropress, a division of Baldwin-Lima-Hamilton, the 285,000-lb unit was conceived as a research tool for use at Cape Canaveral, Fla. There it should provide the Navy with valuable data in connection with the launching of missiles at sea.

That huge assembly, being lowered so carefully in the photograph above, is a Bethlehem weldment consisting largely of castings. The task of machining and assembling the many intricate parts was a major undertaking, but Bethlehem facilities were equal to the job.

Call us when we can be of service in the planning and building of specialized machinery. Our shop facilities are unexcelled, and our many years of experience with this type of work can be helpful to you.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

THE IRON AGE
Chestnut and 56th Sts.
Philadelphia 39, Pa., SH 8-2000
GEORGE T. HOOK, Publisher
EDITORIAL STAFF
TOM C. CAMPBELL, Editor-in-Chief
GEORGE F. SULLIVAN, Editor
Managing Editor E. C. Beaudet
News-Markets Editor J. B. Delaney
Technical Editor J. J. Obrzut
Special Features R. D. Raddant
Machinery Editor E. J. Egan, Jr.
Metallurgical Editor P. M. Unterweiser
Materials Editor Wm. Czygan
Engineering Editor R. H. Eshelman
Art Director T. S. Paaby
Associate Editors: F. J. Starin, P. J. Cathey, R. Schulin, F.T.P. Plimpton, Jr.
Assistant Editor: J. A. Moore. Regional Editors: K. W. Bennett, Chicago; T. M. Rohan, Cleveland; H. R. Neal, Detroit; G. G. Carr, New York; R. R. Kay, Los Angeles; G. J. McManus, Pittsburgh; G. H. Baker, R. M. Stroupe, N. R. Regeimbal, Washington. Correspondents: F. L. Allen, Birmingham; N. Levenson, Boston; R. E. Koebbe, St. Louis; J. Miller, San Francisco; R. Kazarian, Buffalo; D. R. Coughlin, Seattle; A. T. Collins, Houston; F. Sanderson, Toronto; F. H. Harley, London, England; Chilton Editorial Board: Paul Wooton, Washington representative.
WASHINGTON EDITORIAL OFFICE
Washington 4...National Press Bldg.
Robt. Gunning—Readability Consultant
BUSINESS STAFF
Production Manager Warren Owens
Director of Research Oliver Johnson
Marketing Director R. H. Groves
Circulation Mgr. W. M. Coffey
Promotion Manager Richard Gibson
Asst. Research Dir. Wm. Laimbeer
REGIONAL BUSINESS MANAGERS
*Denotes editorial office also
Atlanta 9.....J W. Sangston
32 Peachtree St., NE Jackson 3-6791
*Chicago 1..T. H. Barry, W. R. Pankow
360 N. Michigan Ave. Randolph 6-2166
*Cleveland 15, R.W.Watts, R. L. White
930 B. F. Keith Bldg. Superior 1-2860
Columbus 15, Ohio...Harry G. Mumm
LeVeque-Lincoln Tower Capital 1-3764
Dallas 6.....W. J. Smyth
189 Meadows Bldg. EMerson 8-4751
*Detroit 2.....W. J. Mulder
103 Pallister Ave. Trinity 1-3120
*Los Angeles 28.....R. Raymond Kay
2420 Cheremoya Ave. Holly'd 3-1882
*New York 17...C. T. Post, I. E. Hand
100 E. 42nd St. Oxford 7-3400
*Philadelphia 39—
B. L. Herman, J. A. Crites, W. E. Carr
Chestnut & 56th Sts., Sherwood 8-2000
*Pittsburgh 22.....T. M. Fallon
502 Park Bldg. Atlantic 1-1830
San Francisco 3.....Don May
1355 Market St. UNderhill 1-9737
W. Hartford 7.....Paul Bachman
62 LaSalle Rd. Adams 2-0486
England.....Harry Becker
15 Gratton St., Altrincham, Cheshire
A Chilton Publication
CHILTON OFFICERS & DIRECTORS
Joseph S. Hildreth, Ch. of the Board
G. C. Buzby, President
Vice-Presidents: P. M. Fahrendorf, L. V. Rowlands, G. T. Hook, R. E. McKenna; Treasurer, W. H. Vallar; Secretary, John Blair Moffett; Directors: M. E. Cox, F. P. Tighe, E. B. Terhune, Jr., R. W. Case, Jr., J. C. Hildreth, Jr., C. A. S. Heinle, J. H. Kofron—Comptroller, Stanley Appleby.
Indexed in Applied Science & Technology Index and Engineering Index.

Copyright 1959 by Chilton Company

THE IRON AGE, published every Thursday by CHILTON COMPANY, Chestnut & 56th Sts., Philadelphia 39, Pa. Second class postage paid at Philadelphia, Pa. Price to the metalworking industries only or to people actively engaged therein, $5 for 1 year, $8 for 2 years in the United States, its territories and Canada. All others $15 for 1 year; other Western Hemisphere countries, $25; other Foreign Countries, $35 per year. Single Copies 50¢. Annual Review Issue $2.00. Cable: "Ironage." Philadelphia.

The IRON AGE

February 19, 1959—Vol. 183, No. 8

Digest of the Week in M

★Starred items are digested at right.

EDITORIAL

Taxpayers' Revolt: It's Coming Sure As Rain 7

NEWS OF INDUSTRY

★**Special Report:** Steel Labor and Management Court the Public 81
★Labrador Ore Plans Move Ahead 84
★U. S. Maps World Trade Strategy 85
The IRON AGE Salutes 89
★**Special Report to Management:** Can U. S. Hold Its World Markets? 93
Men in Metalworking 115

FEATURE ARTICLES

★New Tubing Fights Corrosion 123
★Punches and Fast Tooling Changes 126
Spray Quality Finishes Faster 128
★Tumbling Improves Fatigue Strength 129
★Compact Area Speeds Assembly Work 132
Cut Wire Handling Costs 134

NEWS ANALYSIS

Newsfront 9
★**Report to Management** 91
★Automotive 103
★Washington 107
★West Coast 109
★Machine Tool 111

MARKETS & PRICES

Market Planning Digest 121
★**The IRON AGE Summary** 159
★Purchasing 160
Steel Product Markets 162
Index to Prices 163
Iron and Steel Scrap Markets 164
Nonferrous Markets 168
Clearing House 178

REGULAR DEPARTMENTS

Letters 11
Fatigue Cracks 13
Coming Exhibits, Meetings 15
Patent Review 138
Free Literature 140
New Materials, Components 148
New Equipment 154

INDEX TO ADVERTISERS 183

NEWS ARTICLES

LABOR AND MANAGEMENT

Courting the Public—With a lot riding on the outcome, steel companies and labor vie for public support. Both sides launch major propaganda campaigns—the biggest in steel labor history. P. 81

FEATHERBEDDING

Showdown Coming?—Railroads have served notice they will try to eliminate or cut the $500 million annual bill they pay for featherbedding. But to succeed they will need public support. P. 91

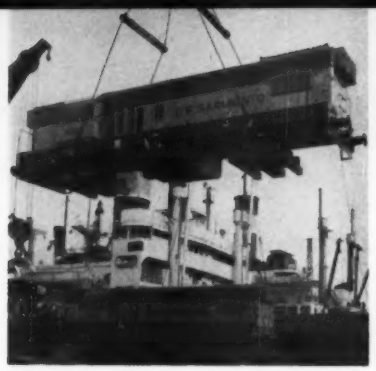
AUTO DEALERS

Stickers Help Sales—The law requiring new cars to display price stickers have restored consumer confidence, some dealers say. Now the buyer has a better idea what a car is worth. P. 103

INTEREST RATES

Too High? — Federal Reserve

Metalworking



WORLD MARKETS: Volume of U. S. export, as depicted by this ship loading locomotives (Delaware River Port Authority photo), has fallen off sharply. This week's Special Report to Management explains what is happening to our foreign trade. P. 93

Board Chairman Martin says they aren't. He opposes a cut. It stacks up as a battle between hard and soft money advocates. P. 107

JETLINER TRAVEL

Coast to Coast In An Hour?—Jet designers predict cross-country travel at three to five times the speed of sound by 1970's. However, cost of developing first supersonic transports will be large. P. 109

FEATURE ARTICLES

COMPOSITE TUBING

Fights Corrosion—A new product joins jackets and liners with unbreakable molecular bonds. It's a potential solution for process industries plagued with heat-transfer and corrosion problems. The tubing is produced with various metals up to 3-in. OD. P. 123

FOR FAST TOOLING CHANGES

Leave Punches in Place — Retractable piercing punches can be put in or out of service without removal from press. Of the two basic methods for retracting, one uses a double setscrew, while the second features a side-acting wedge. P. 126

FATIGUE STRENGTH

Improve with Tumbling — Besides improving finish and removing burrs, barrel tumbling provides an extra benefit: By inducing compressive stresses in metal surfaces, it boosts fatigue strength. P. 129

NEW FEATURE

Patent Review—Now you can get a fast rundown on important new patents in the metals field from your IRON AGE. It starts this week and will appear on the third issue each month from now on. Turn to P. 138

ASSEMBLE, BRAZE, TEST

In Compact Setup—A combined work area takes less plant space and makes it easier for one operator to do many jobs. P. 132

MARKETS & PRICES

LABRADOR IRON ORE

Ready in Early '60's—Shipments from Iron Ore Co. of Canada's $175 million project are expected by the early 1960's. Two other iron ore developments in the same area are also pushed. P. 84

ECONOMIC WAR

U. S. Maps Strategy—In Washington, firm plans for countering the Red economic threat are shaping up. Emphasis is on low-interest loans to underdeveloped nations. P. 85

NEW TOOLS FROM OLD

Reworking Cuts Costs—Fabricators at Ryan Aeronautical take discarded tools, rough saw and bond them. These are kept for machining into new tools as needed. P. 111

STEEL INVENTORY

Is a Crisis Brewing?—Will steel users be able to build up enough inventory to weather a strike? Some mills are beginning to doubt it. P. 159

PRESS DELIVERIES

Stretchout Expected — Sales of heavy, special presses are pacing the market. But with standard equipment also moving well there's a good prospect of shipping advances in the first half. P. 160

NEXT WEEK

TECHNICAL MANAGEMENT

Creative Talent — Supervising a research program is a demanding job. Next week, Burroughs Corp.'s Dr. Irven Travis gives some advice on technical management, with emphasis on problems of dealing with creative talent.

"B&W's Mr. Tubes gives me the 'extra' help I need to engineer for profit!"

YOU can ENGINEER FOR PROFIT by keeping your piping costs as realistic as possible. Specifying and buying welding fittings and pipe, especially the alloys, can be pretty tricky. Admittedly, most alloy jobs are, inherently, both complex and expensive. Any error in judgment can throw costs way out of proportion. That's why it pays to call in B&W's Mr. Tubes. Put him on your planning team . . . he's the man that can help make your specifying decisions more certain.

As your local B&W representative, Mr. Tubes is well qualified to give you the kind of technical help you need to hold your alloy piping costs to a minimum. He can offer dependable help in selecting the most economical grades and sizes best suited for your end-use applications.

And, through Mr. Tubes, you can save both time and money by utilizing B&W's "one-source" supply. You get a matched piping system — both pipe *and* fittings, in the materials you need — when you need them. Buying and delivery are more closely controlled, too. Check with Mr. Tubes on your next job. He can be reached at any B&W Tubular Products Division District Sales Office. The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pennsylvania.

B&W TUBULAR PRODUCTS DIVISION

TA-8032-G5

Seamless welding fittings and forged steel flanges, seamless and welded tubular products, solid extrusions — in carbon, alloy, stainless steels and special metals.

B.F.Goodrich

SUCCESS STORIES

B.F.Goodrich distributors helped these customers cut costs. Can they help you?

Magnetic Attraction

At the steel plant in the picture, wire from big coils goes into a machine that forms it into nails and spits them out against a rubber belt with magnets behind it. Up the nails go and into a cart to be wheeled away. But when ordinary belting was used, the nails used to slip and slide; the belts were short-lived.

Then a B.F.Goodrich distributor sold the company B.F.Goodrich oil-resisting Griptite belts. Parallel ribs of flexible rubber, spaced four to the inch, give this belt good gripping action.

Now the nails stick to the belts much better. Each Griptite belt lasts about a year—four or five times as long as former belts lasted.

Shakedown treatment

An Alabama coal mine uses big metal tables to separate the rock that gets mined with coal. Coal and water are dumped on these tables, which jiggle constantly, literally shaking the rock out of the coal. But the sharp rock and coal wore out every material used to cover the tables. Some covers lasted only two months.

When a B.F.Goodrich distributor heard about this, he told the coal company about B.F.Goodrich "Armorite", a rubber so tough it often outlasts the hardest steel 10 to 1. One of the coal-shaking tables was covered with this rubber. It lasted 10 years, handled 1,841,190 tons. Because of the big savings in repairs and replacements, the company has had all their coal-separating tables covered with Armorite.

Duct soup

A manufacturer of photographic equipment in New York state bought a test section of fume duct 6 feet by 6 feet by 4 feet, made of B.F.Goodrich rigid Koroseal material. Koroseal, often made in flexible forms, can be made rigid, resists most acids and chemicals. The distributor has now received approval of the test and authority to proceed with a system which will cost about $7,000.

Good riddance

A steel company used to have trouble piping huge quantities of fly ash to a disposal pit. The mixture of acid water, gritty fly ash and metal slivers was wearing holes through metal pipe in only six months. Each pipe replacement cost $700 plus about 100 hours of workers' time.

Company engineers, working with a B.F.Goodrich distributor, decided to replace the pipe with a B.F.Goodrich hose designed to handle rough materials. After 8 years' service, the B.F.Goodrich hose, called "Convertapipe", shows no sign of wear, looks good for years more use. Plant engineers figure the change from pipe to rubber hose has already saved $6,400 in replacement costs and $4,800 in maintenance costs.

Hot foot

A manufacturer of house-trailer steps in Arizona had trouble with ordinary rubber stair treads in the hot Arizona climate. Aluminum sheets on the vertical panels of steps reflected and concentrated the sun's rays on the horizontal rubber parts, making the temperature 140 to 170 degrees.

Then Koroseal runner matting was recommended by a B.F.Goodrich distributor. Customer finds it stands the sun better, has long life, is oil-resisting, easy to clean, does not creep.

Chain reaction

A B.F.Goodrich distributor in Massachusetts sold large-size V belts to a food processor by redesigning a high-cost chain-type conveyor carrying trays. The rubber belts work better than the chain, save money for the customer.

Nails fall up, costs go down—see "Magnetic attraction"

New product

Industrial fire hose. B.F.Goodrich "Imperial" hose, made with an all-Dacron jacket, is recommended for heavy-duty service in oil refineries, chemical plants, construction jobs, mining, and in general industrial service. Hose is lighter, more flexible, stronger, longer-lasting than conventional industrial fire hose; has exceptional resistance to abrasion, is impervious to mildew, oil, acids, alcohols, hydrocarbons and detergents. Sizes: 1″, 1½″, 2″, 2½″.

New catalog

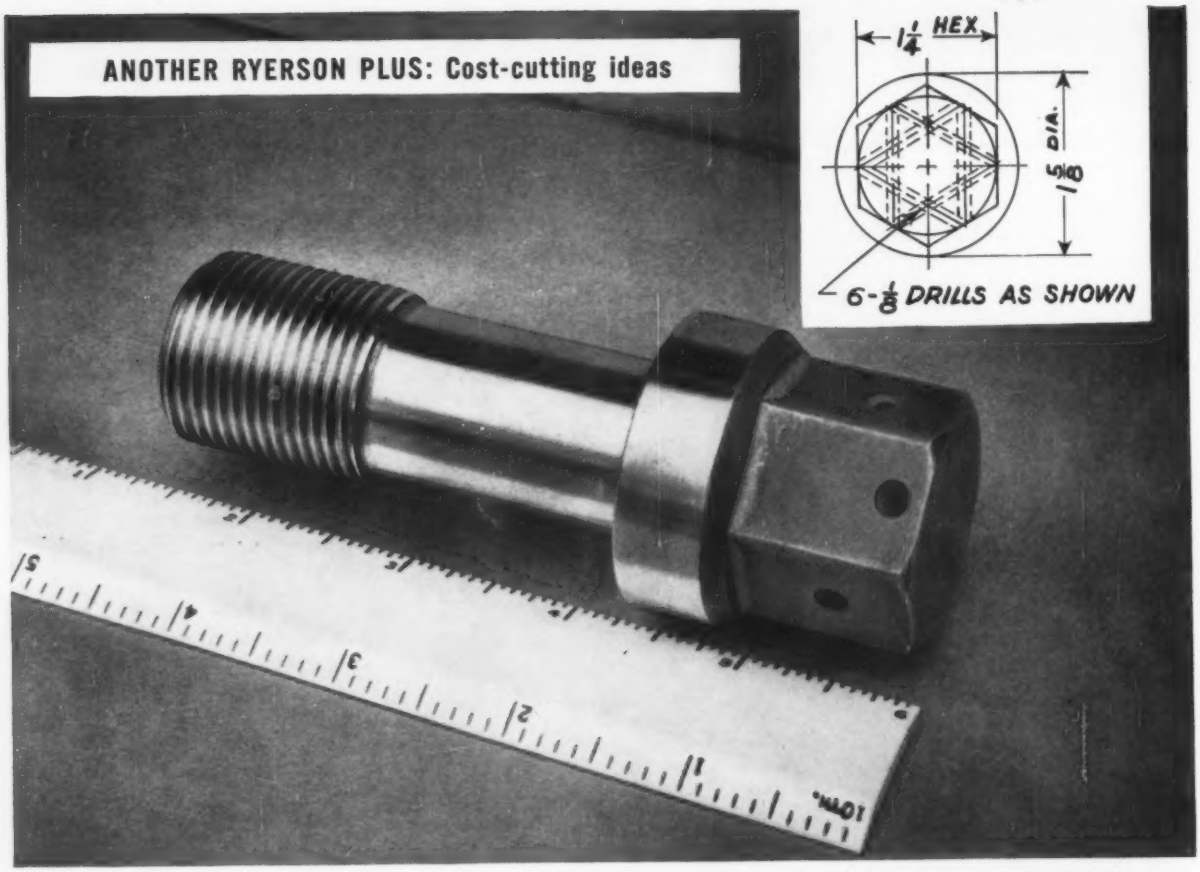
Oil-resisting conveyor belts. Catalog No. 2460 tells how to select B.F.Goodrich oil-resisting conveyor belts. Performance of three types of belting—oil-resisting, oilproof and superoilproof—is compared in services where belts are subjected to petroleum oils, cutting oils, organic solvents, cleaners, lacquer solvents and fatty oils.

For more information

For full information about any product described on this page, see your B.F.Goodrich distributor or write *B.F.Goodrich Industrial Products Co., Dept. M-517, Akron 18, Ohio.*

Koroseal—T. M. Reg. U. S. Pat. Off.

B.F.Goodrich
industrial rubber products



Rycut 40 drills cleanly, cuts down on tool wear and breakage.

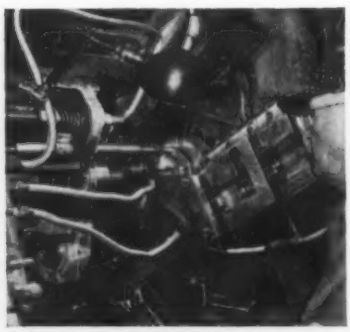
Rycut 40 alloy steel boosts production 30%, tool life 50%

Drilling piston pin bolt heads of AISI 4140 was a costly problem at Hyland Machine Co., Dayton, Ohio.

The job called for cross-drilling two holes in each face of the hex head (see diagram). A Ryerson specialist recommended new Rycut 40, the world's fastest machining alloy steel in its carbon range.

Here are the results, from Partner Forest Hyland: "We have cut down drill breakage. We have 15% fewer rejections. There is a marked improvement in finish, plus a comparable saving shown in milling the head of the bolt. Tool life on the automatic screw machines is 50% longer, total production is up 30%. Now we can produce this bolt at a competitive price."

There is a dependable, cost-cutting steel at Ryerson to meet every requirement. The Ryerson quality controls assure you of getting steel you can count on for dependable performance—every time. Ask your Ryerson specialist for help on your steel problems.



Six-spindle automatic screw machine producing piston pin bolts with cost-cutting Rycut 40.

RYERSON CERTIFIED QUALITY

RYERSON STEEL

Member of the INLAND Steel Family

Principal Products: Carbon, alloy and stainless steel—bars, structurals, plates, sheets, tubing—aluminum, industrial plastics, metalworking machinery, etc.

PLANTS AT: NEW YORK • BOSTON • WALLINGFORD • PHILADELPHIA • CHARLOTTE • CINCINNATI • CLEVELAND • DETROIT • PITTSBURGH
BUFFALO • INDIANAPOLIS • CHICAGO • MILWAUKEE • ST. LOUIS • DALLAS • HOUSTON • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

Taxpayers' Revolt: It's Coming Sure as Rain

Usually we think of the Federal government when we think of taxes. But that is only part of the picture.

The village, the city, and the townships have caught on. When they want something they raise the taxes. Then the county needs things—or thinks it does. That spells more taxes. All this is a slow but irrevocable trend that suddenly floors us.

The spend-and-be-hanged idea which started in Federal government has now reached down to all branches of government. And it will get much worse long before it gets better.

Many states are now giving their taxpayers a nightmare. State taxes are surging upward. The "theory" is that everyone will calmly pay "his share." But Nelson Rockefeller, newly elected governor of New York state, has had a rude awakening. His move to substantially raise taxes on gas and up the state income taxes by "painless" gimmicks has backfired.

In New York state this week the people are almost as aroused as were the boys in Pennsylvania who started the Whisky Rebellion in 1791. True, that was put down but it took 15,000 militia to do it. While we do not look for an armed rebellion today, aroused taxpayers can make mincemeat out of political aspirations of the "ins."

No one in his right mind suggests that local, state, and national governments do not have certain duties to perform. Or that these cost money. But those who can see ahead will not stand too long for this gigantic grab bag idea that we can have everything we think we need just by taxing.

So far, the politicians—even in New York State—seem to be afraid of the party whip and are not heeding the rumblings that are coming from the stiffs who pay the bills. Maybe some taxpayers do want welfare, frills, and plush services without wanting to pay for them. But that is beside the point. What most people want now is less spending instead of higher taxes.

And let's not be too complacent about what taxes are. It isn't only what you have taken out of your pay. It is school, township, county, and state taxes, too. It is the hidden tax on everything you buy. It is in the foolish farm surplus props which are no more than a tax against one class for the use of another.

The taxpayers' revolt has already begun. Now is the time for leaders, parties, and people to sense the groundswell. If they don't, they are goners because the worm is getting ready to turn.

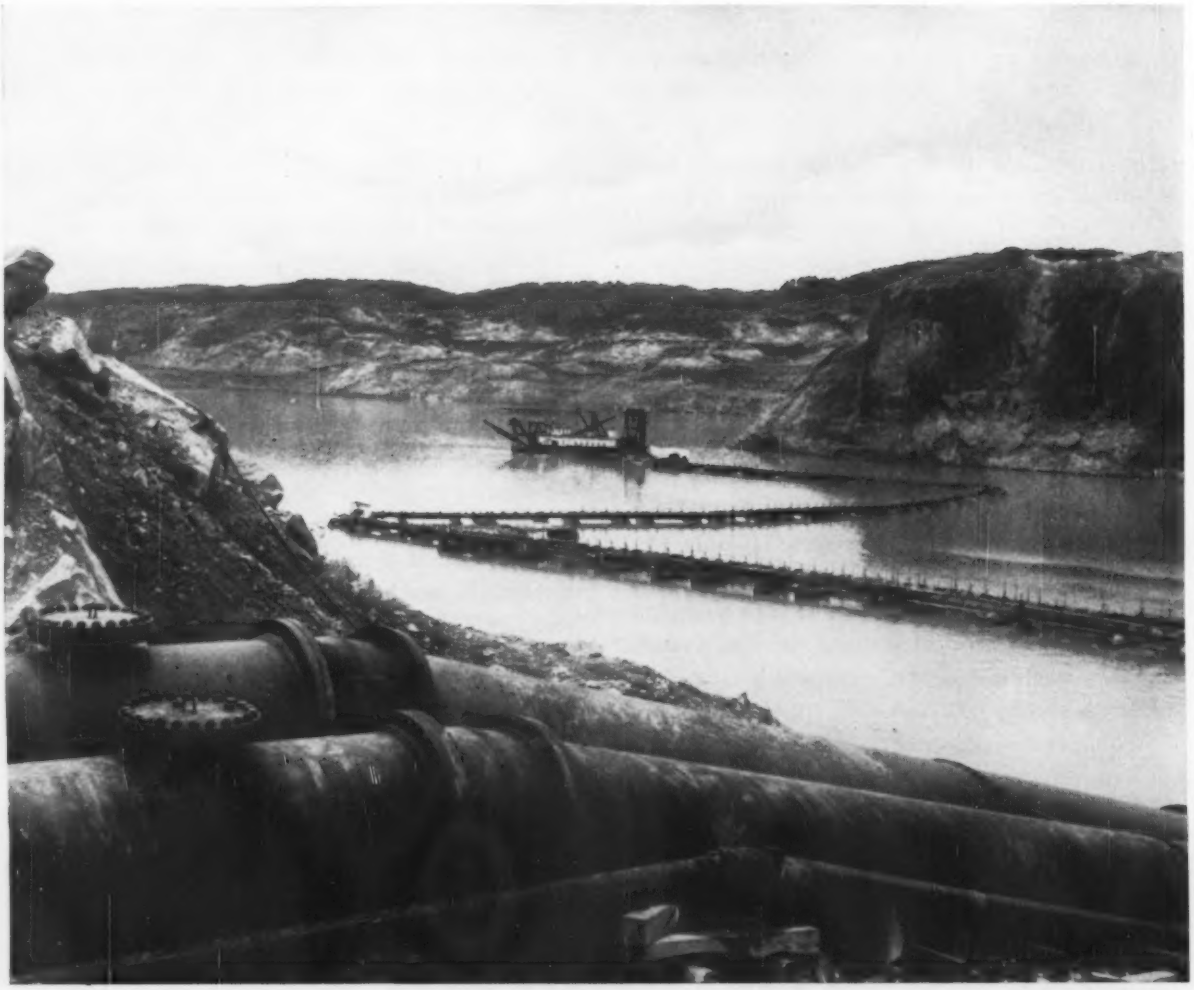
Tom Campbell

Editor-in-Chief

THE BIG SIP !

Twenty-four hours per day—for 35,000 continuous hours since 1955—enormous steel straws have been drinking up and re-filling an ancient ice-age lake. It's happening at Atikokan, Ontario, where beneath millions of tons of glacial silt at the bottom of Steep Rock Lake, a vast treasure trove of iron ore has been found. In the Spring of 1960, when the last of the silt has been removed and the lake emptied for the last time, mining will begin. At peak operation the new mine will furnish 3 million tons of ore a year to Inland's blast furnaces. This is another giant step in Inland's long-range expansion program to meet the growing needs of industrial Mid-America, now and in the future.

building today, with an eye to tomorrow



INLAND STEEL COMPANY

30 West Monroe Street · Chicago 3, Illinois

Sales Offices: Chicago · Davenport · Detroit · Houston
Indianapolis · Kansas City · Milwaukee
New York · St. Louis · St. Paul

INLAND

Other members of the Inland family
JOSEPH T. RYERSON & SON, INC.
INLAND STEEL PRODUCTS COMPANY
INLAND STEEL CONTAINER COMPANY*
INLAND LIME & STONE COMPANY* *Division

New Weld for Light Gages

Providing readily controlled welding at high speeds, a new process welds sheet metal in a range of thickness heretofore not considered weldable by any process: 0.030-0.040 in. The method works on sheet up to 0.100-in. thick and for stringer beads or position welding on thicker material. Key to the process is control of surge current to produce a stable buzzing arc.

Woo India Steel Trainees

Washington is quietly urging steel producers to train more young steelmakers from India. We now train 100 a year. India, hard pressed for qualified steel executives, needs many times more. U. S. S. R. presses a plan for India to drop Free World instruction and send all trainees to Soviet mills. Ford Foundation pays for instruction in U. S.

Automate Chipless Forming

For high production of parts ranging up to 16-in. diam and 15-in. length, a new setup features an automatic cycle including loading and unloading. Its vertical design with radially-opposed rollers insures extreme accuracy. Hydraulic tracer control makes production of complex shapes a push-button operation.

Protect Parts from Solder

A simple effective method protects heat-sensitive electronic components during soldering to circuit cards. A standard metal clamp is lined with felt. With felt saturated with water, the clamp is attached to the lead wire between the soldered joint and the component. Heat traveling along the lead wire is dissipated by evaporation of water from the felt, thus protecting the part.

Test Before Stretch Form

Variation in yield points of high-strength alloys for missiles gives fabricators the jitters. Scrap rates up to 80 pct on stretch-formed parts are not unusual. One solution is new type stretch former which gives each workpiece a tensile test to check yield point before stretching. Root of problem is that most ductility and elongation properties in high-strength steels have been sacrificed. After cold working there is only about 5-pct elongation left.

Porosity in Powder Metals

A new sintering theory in powder metallurgy stresses porosity of the green compact as a key to control of physical properties of the sintered product. Greater porosity with smaller pore size speeds rate of material transportation, but lowers rate of grain boundary movement.

Nylon for Heavy Sections

Nylon 6, a type of nylon long popular in Europe, will soon be available here in bar, tube, plate and sheet form. Its special properties are high shock and impact resistance (about 2½ times that of nylon 6-6), high heat resistance, and ability to be worked at higher temperatures without deterioration. This makes possible the molding of large parts with heavier sections.

Cast with Forging Strength

A new steel is said to give castings strengths in the range of forgings. Still largely experimental, the development is a joint project of a major automotive laboratory with one of midwest's largest foundries. Modulus of elasticity is given as 28 million psi. Other properties are equally attractive.

Anti-Missile Missile Aid

One of the first congressional boosts in the President's defense spending recommendations may come in the Army's anti-missile missile program. House Democrats are sympathetic to the Army's quiet bid to have $700 million restored to its budget to start limited production of Nike-Zeus. Army brass originally asked that much to gain lead-time, but Pentagon-White House fiscal officers cut it.

Another Tinnerman Original...

Cost-cutting Tubular **SPEED CLIP®** takes positive "bite" to hold assemblies tight!

In seconds, you can front-mount trim, name plates, grilles, knobs, insulation, with Tubular SPEED CLIPS. And at interesting savings in assembly time and costs!

Snap these quality spring-steel fasteners into holes in metal, plastic or wood. Then press the mounting studs, nails or rivets into the clips to complete the attachments... anywhere along your assembly line.

As the SPEED CLIP is inserted, spring fingers compress, then expand behind the panel to lock tight. The rolled-in end permits easy entrance, but bites hard into the stud to prevent back-off or vibration-loosening.

Tubular SPEED CLIPS are available for a full range of stud sizes and panel thicknesses. Permanent lock or removable types.

Check your Sweet's Product Design File (Section 8/Ti) for data on Tubular SPEED CLIPS and other SPEED NUT brand fasteners. Then call your Tinnerman representative for samples and additional information. If he isn't listed under "Fasteners" in your Yellow Pages, write to:

TINNERMAN PRODUCTS, INC.
Dept. 12 • P. O. Box 6688 • Cleveland 1, Ohio

TINNERMAN
Speed Nuts®

FASTEST THING IN FASTENINGS®

CANADA: Dominion Fasteners Ltd., Hamilton, Ontario. GREAT BRITAIN: Simmonds Aerocessories Ltd., Treforest, Wales. FRANCE: Simmonds S. A., 3 rue Salomon de Rothschild, Suresnes (Seine). GERMANY: Mecano-Bundy GmbH, Heidelberg.

LETTERS FROM READERS

Labor Unrest

Sir—Please send us as many copies as possible of the feature article, "Strengthen First-Line Supervision to Avert Labor Troubles," which appeared in your Feb. 5 issue.

We at the Lester Works of Westinghouse Electric Corp. agree 100 pct with Mr. R. N. McMurry's comments in this article and will be looking forward to further articles along this line.—J. J. Jennings, Jr., Wage and Salary Administrator, Westinghouse Electric Corp., Lester Branch, Phila.

Sir—We would like 25 copies of this article. We would like to distribute them among our members.—J. P. Gilroy, Recording Secy., Local #5051, United Steelworkers of America, Mechanicsburg, Pa.

Sir—Mr. Roemer would appreciate two copies of the article on strengthening first-line supervision to avoid labor troubles. —D. M. Struble, Secy. to James A. Roemer, chairman, Sharon Steel Corp., Sharon, Pa.

Ductile Iron

Sir—Your article "Behind the Growing Market for Ductile Iron" (Dec. 4 issue) mentions that the International Nickel Company discovered this material in May, 1948. While I do not wish to detract from the contribution that International Nickel made I must raise my voice on behalf of the British Cast Iron Research Association. Will you please check their work at Alvenchurch, Birmingham, England, and their success in producing ductile or nodular iron.

My reading indicates that credit for discovery belongs to the B.C.I.R.A. with an assist of International Nickel for their developmental work.—G. S. Schaller, professor, Dept. of Mechanical Engineering, Univ. of Washington.

▪ In reply International Nickel comments:

"Our discovery was announced on May 7, 1948. At that time Mr. Morrogh of B.C.I.R.A. presented a paper in Philadelphia. But our discovery was made in early 1943. The actual discovery dates of both Inco and B.C.I.R.A. are on file in patent offices around the world, and clearly accepted by B.C.I.R.A. Actually, the researches of Inco and Mr. Morrogh were almost contemporary, with Inco leading in time by only three or four years."

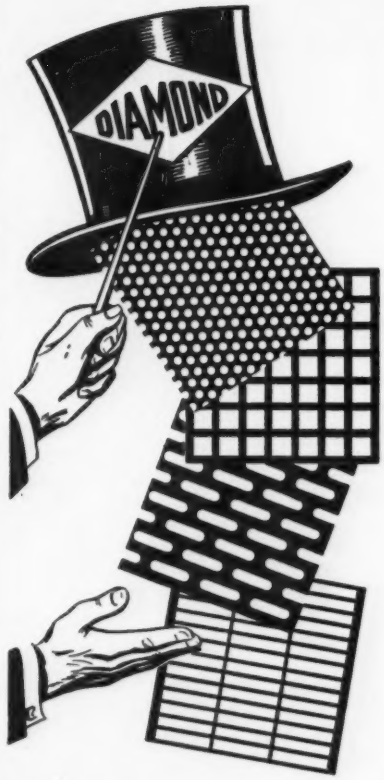
Non-Lunik

Sir — Congratulations on your Jan. 22 editorial "We and the Russians, Let Us Not be Luniks." Truly it deserves to be printed in all of our business journals.

Well done again.—R. J. Wujek, Purchasing Agent, Roberts-Gordon Appliance Corp., Buffalo.

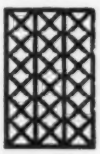
▪ It has been entered in the Congressional Record by Senator Styles Bridges.—Ed.

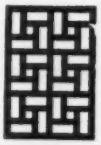
"We're just about due for an upswing, Ed—"



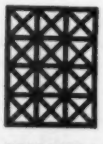
Top-Hat Quality IN Perforated Metal

The popular Diamond Perforated-metal patterns shown above are only a few of the many illustrated and described in our 32-page Catalog No. 39. All of these standard patterns are available in a wide range of unit-opening sizes and we are always equally pleased to quote on original designs of any type or size.

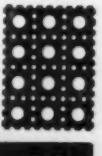




Catalog 39 also illustrates and describes our high-quality lines of *Ornamental Cane*, Perforated-Metal Sheets for Accoustical installations and Heavy-Duty Architectural Grilles. Write, today, for a free copy.



Correspondence is especially invited regarding ANY requirement for perforated-metal panels or parts. We are equipped to fabricate special sections to any desired extent and welcome opportunities to make money-saving suggestions.



DIAMOND MFG. CO.
WYOMING WILKES-BARRE AREA PA.

Manufacturers of DIAMONTEX, the Perforated Metal Lay-In Panel for better Acoustical Ceilings. New Bulletin No. 47 gives complete illustrated information. Write for free copy.

"WEIRKOTE® WON'T PEEL OR FLAKE—AND CAN END THE NEED FOR FURTHER CORROSION PROTECTION AFTER FABRICATION."

Q. A zinc-coated steel sheet that won't peel or flake, even under the severest fabricating stresses?

A. Precisely. Weirkote's made by a continuous process. The zinc is so integrated with the steel that even the toughest "torture" tests of fabrication leave that bonded coating intact. You can work Weirkote to the very limits of the steel itself!

Q. Our products are pretty intricate—take lots of flexing, crimping and so on. What about those hard-to-reach places?

A. Weirkote's zinc coating is so uniform—protects even the most complicated parts.

Q. So with Weirkote you bypass the need for further corrosion protection?

A. You get the picture! Think of the time, labor, space—the costly capital outlay—you save. Better steel products at far lower costs—that's Weirkote for you!

Send for free booklet that details the time-and-cost-saving advantages of skin-tight zinc-coated Weirkote. Just write Weirton Steel Company, Dept. A-2, Weirton, West Virginia.

WEIRTON STEEL COMPANY

WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

a division of

NATIONAL STEEL CORPORATION

FATIGUE CRACKS

World Trade

Even if you're not selling abroad it's almost certain you have an interest in world trade. These days, when the subject crackles with a mounting intensity, it's hard not to.

Discussions continue about the stepped up pace of Red economic warfare: there's alarm about the mounting tide of imports into the U. S.; and concern about our export market.

That's why "Can the U. S. Hold Its World Markets?," is the subject of this week's Special Report to Management (p. 93). You'll find it a full-scale, yet compactly written, study on what's happening in international trade and what it means to U. S. industry.

Included is an analysis of where we stand in terms of world markets and reasons why the picture is not all gloomy. In addition the article pinpoints the facts a potential American exporter should know about foreign markets. And it tells how to get into the export business and where to go for help.

There's also a rundown of the demand abroad for various metalworking products from the U. S.

So whether your interest in export is actual or potential we recommend this Special Report for your benefit.

New Feature

What's new in metalworking? It's our continuing duty to keep you up-to-date on all new metalworking developments.

And as part of that job we're adding another monthly feature. It's a compact digest of the latest patents granted in the metals field. You'll find it on p. 138 of this issue.

In this review—which will appear in the third issue of each month—we will brief these recent patents for your quick reference.

Metals Crossroads

We've always known our Pittsburgh office in the Park Building was close to important metalworking operations. But we never realized how close we actually were to an important first in the history of the metals industry. Now we do, thanks to the Pennsylvania Historical and Museum Commission.

The Commission has erected a sign just outside the building. It reads:

"McClurg Iron Foundry built here in 1804. The first air foundry in Pittsburgh. Made cannon, shells and balls during War of 1812. In 1835 (McClurg) built the first steam locomotive west of the Alleghenies."

Sort of puts us in tune with the past while we're reporting the present of metalworking, you might say.

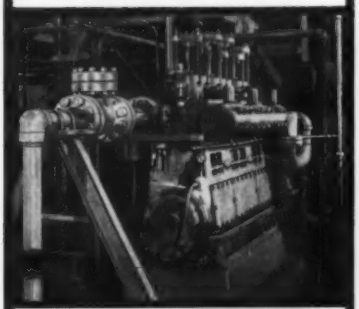
February Humor

Yet another story showing Abraham Lincoln's keen wit has turned up.

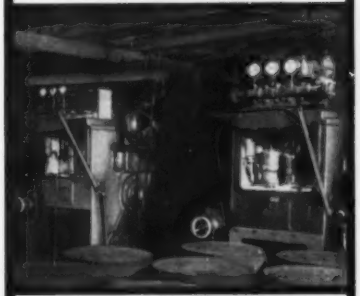
Seems he once had a legal opponent who was a longwinded braggart. His adversary reminded him, Lincoln said, of a small steamboat. It had a five-foot boiler and a seven-foot whistle. Every time it whistled it stopped.

"We have just recently changed over to throwaway tooling."

COMPLETE CENTRAL HYDRAULIC SYSTEMS FOR



die casting



extruding

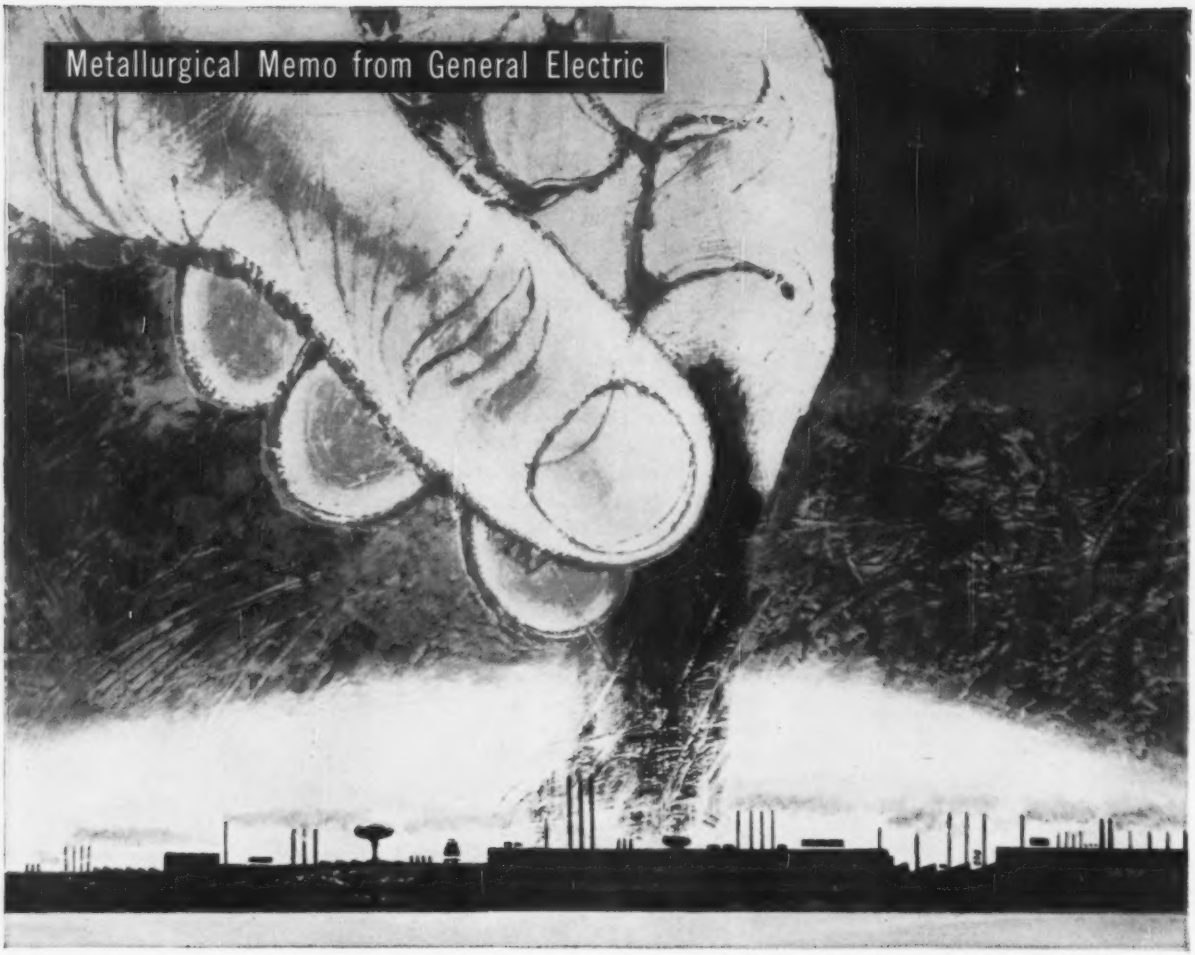
plastics molding

From Aldrich you get all the benefits of unified engineering plus the newest in pumping equipment. Aldrich Direct Flow Pumps to 2500 hp. Aldrich-Groff Controllable Capacity pumps to 125 hp. Pressures to meet your requirements. Write for data.

LOWER PUMPING COSTS WITH

ALDRICH

Aldrich Pump Company
3 Gordon Street, Allentown, Penna.



260 ways to "package" a pinch of powder

Metallurgical Products Department reports on a line of 260 locally-stocked Carboloy® cemented carbide inserts that slashes inventory and special-order costs

Carboloy cemented carbides start as metal powders – end as man-made metals in a variety of disposable inserts *unmatched* in the industry.

And that's where you save with Carboloy cemented carbides. You choose from 260 different inserts – 11 styles – 7 cutting grades – in any size, thickness, radius, or shape you need. You get an insert that's almost tailor-made for your particular job without costly special-ordering; and you get it *fast*, from a *local* distributor who carries your inventory *for you*.

All Carboloy cutting tools are stocked by your local Authorized Carboloy Distributor. Call him (see the Yellow Pages, under "Carbides"); or write: *Metallurgical Products Department of General Electric Company, 11153 E. 8 Mile Ave., Detroit 32, Michigan.*

METALLURGICAL PRODUCTS DEPARTMENT

GENERAL ELECTRIC

CARBOLOY® CEMENTED CARBIDES

CARBOLOY® CEMENTED CARBIDES • MAN-MADE DIAMONDS • MAGNETIC MATERIALS • THERMISTORS • THYRITE® • VACUUM-MELTED ALLOYS

COMING EXHIBITS

Western Metal Show—March 16-20, Pan-Pacific Auditorium and Ambassador Hotel, Los Angeles. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

Corrosion Show — March 16-20, Chicago. (National Assn. of Corrosion Engineers, 1061 M & M Bldg., Houston 2, Texas.)

1959 Nuclear Congress—Apr. 5-9, Cleveland Auditorium, Cleveland. (Engineers Joint Council, 29 W. 39th St., New York 18.)

Welding Show—Apr. 6-10, International Amphitheatre, Chicago. (American Welding Society, 33 W. 30th St., New York.)

Engineered Castings Show — Apr. 13-17, Sherman and Morrison Hotels, Chicago. (American Foundrymen's Society, Golf & Wolf Rds., Des Plaines, Ill.)

Packaging Exposition—Apr. 13-17, International Amphitheatre, Chicago. (American Management Assn., 1515 Broadway, N. Y.)

Powder Metallurgy Show — Apr. 20-22, Sheraton - Cadillac Hotel, Detroit. (Metal Powder Industries Federation, 130 W. 42nd St., New York 36.)

Design Engineering Show — May 25-28, Convention Hall, Philadelphia. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Material Handling Show — June 9-12, Public Auditorium, Cleveland. (Hanson & Shea, Inc., One Gateway Center, Pittsburgh 22.)

MEETINGS

FEBRUARY

Alloy Casting Institute — Winter meeting, Feb. 26-27, Boca Raton Hotel, Boca Raton, Fla. Institute headquarters, 286 Old Country Rd., Mineola, N. Y.

(Continued on P. 16)

SHEPARD NILES

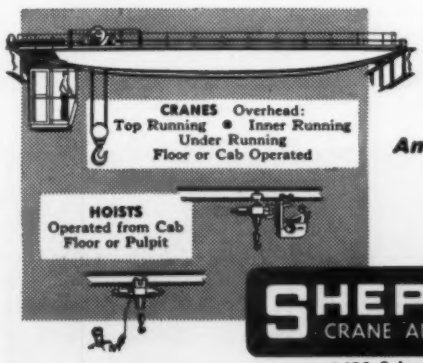
MONORAIL HOIST

MORE ROOM

. . . for production and storage

Why move materials around men, materials and machines? Use the direct route — smoothly and safely — through air. Shepard Niles Monorail Hoists and Transfer Cranes put load handling overhead . . . eliminate costly ground level handling. Use the space saved for production and storage.

Rugged Shepard Niles hoists are available for constant or intermittent service. Choose from light, medium or heavy duty hoists equipped with cab or floor controls. Offered in fast, medium or slow speeds. Send for Monorail Hoist bulletin today . . . or ask that a Shepard Niles representative call — there's NO OBLIGATION.



Building
America's Most Complete Line
of Cranes and Hoists
Since 1903

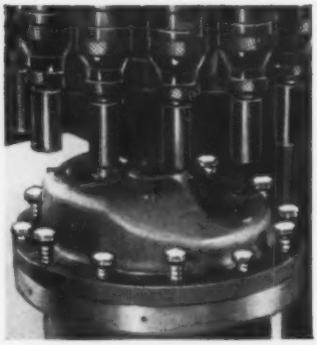
SHEPARD NILES
CRANE AND HOIST CORPORATION

1492 Schuyler Ave., Montour Falls, N. Y.

THE NEED + THE IDEA = THE PRODUCT

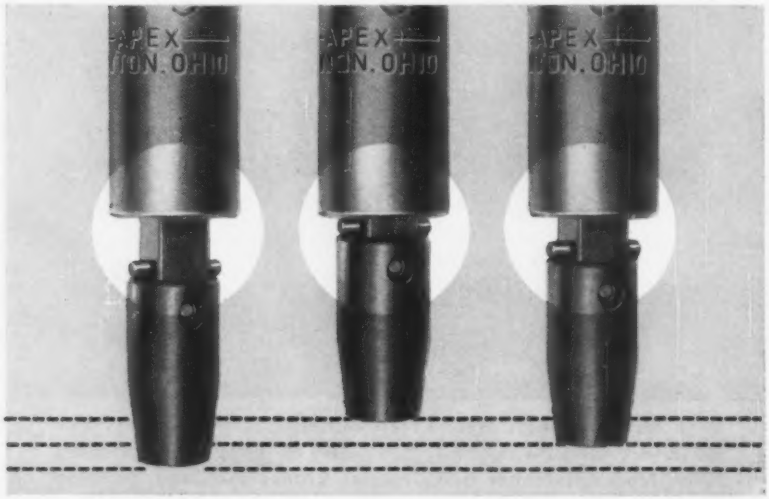
THE NEED

On multiple tool operation, where fasteners are positioned manually, the distances between sockets and mating fasteners will vary. Despite this variance, all the fasteners must be run in simultaneously and securely, without impairing the workpiece, fastener or tool.



THE PRODUCT

APEX CLUSTER SOCKETS



The Apex cluster socket, specifically designed for multiple tool applications, automatically compensates for any variation in fastener height. As the bank of power tools moves up to the fasteners, the spring-retracting action of each Apex cluster socket "levels" the fasteners, insuring uniform, positive seating and eliminating any possibility of cross-threading.

At Apex—the authority on fastening—the need creates an idea, closely followed by a new product. What's your need for special fastening tools? Our new Catalog 30-D lists several Apex "specials", one of which may solve your fastening problem—and your cost problem as well! Write, on your company letterhead please, for your copy.

APEX FASTENING TOOLS

SCREWDRIVING • NUT RUNNING • SPECIAL

The APEX Machine & Tool Co. • 1029 So. Patterson Blvd. • Dayton 2, Ohio

EXHIBITS, MEETINGS

(Continued from P. 15)

MARCH

Steel Founders' Society of America—Annual meeting, Mar. 9-10, Drake Hotel, Chicago. Society headquarters, 606 Terminal Tower, Cleveland.

International Acetylene Assn.—Annual convention, Mar. 9-10, Hotel Roosevelt, New Orleans, La. Association headquarters, 30 E. 42nd St., New York 17.

Fire Equipment Manufacturers Assn., Inc.—Annual meeting, Mar. 11-12, Barbizon-Plaza Hotel, New York. Association headquarters, 759, One Gateway Center, Pittsburgh.

Pressed Metal Institute — Annual spring technical meeting, Mar. 11-13, Pick-Congress Hotel, Chicago. Institute headquarters, 3673 Lee Rd., Cleveland 20.

American Institute of Chemical Engineers—National meeting, Mar. 15-19, Haddon Hall, Atlantic City, N. J. Institute headquarters, 25 W. 45th St., New York 36.

Society for Non-destructive Testing, Inc. — Western regional convention, Mar. 16-20, Ambassador Hotel, Los Angeles. Society headquarters, 1109 Hinman St., Evanston, Ill.

Investment Casting Institute—Meeting, Mar. 17-19, The Surf Rider, Santa Monica, Calif. Institute headquarters, 27 E. Monroe St., Chicago.

American Machine Tool Distributors' Assn.—Spring meeting, Mar. 17-19, The Sheraton-Park Hotel, Washington, D. C. Association headquarters, 1900 Arch St., Philadelphia.

Electronics Industries Assn.—Quarterly meeting, Mar. 18-20, Statler Hotel, Washington, D. C. Association headquarters, 1721 DeSales St., N. W., Washington.

From Vacuum-Poured Ingot to Generator Shaft

This complex generator shaft began as a huge ingot of nickel-molybdenum-vanadium steel, cast by the vacuum method developed at Bethlehem. Our facilities now produce the largest ingots ever made by the vacuum-casting process.

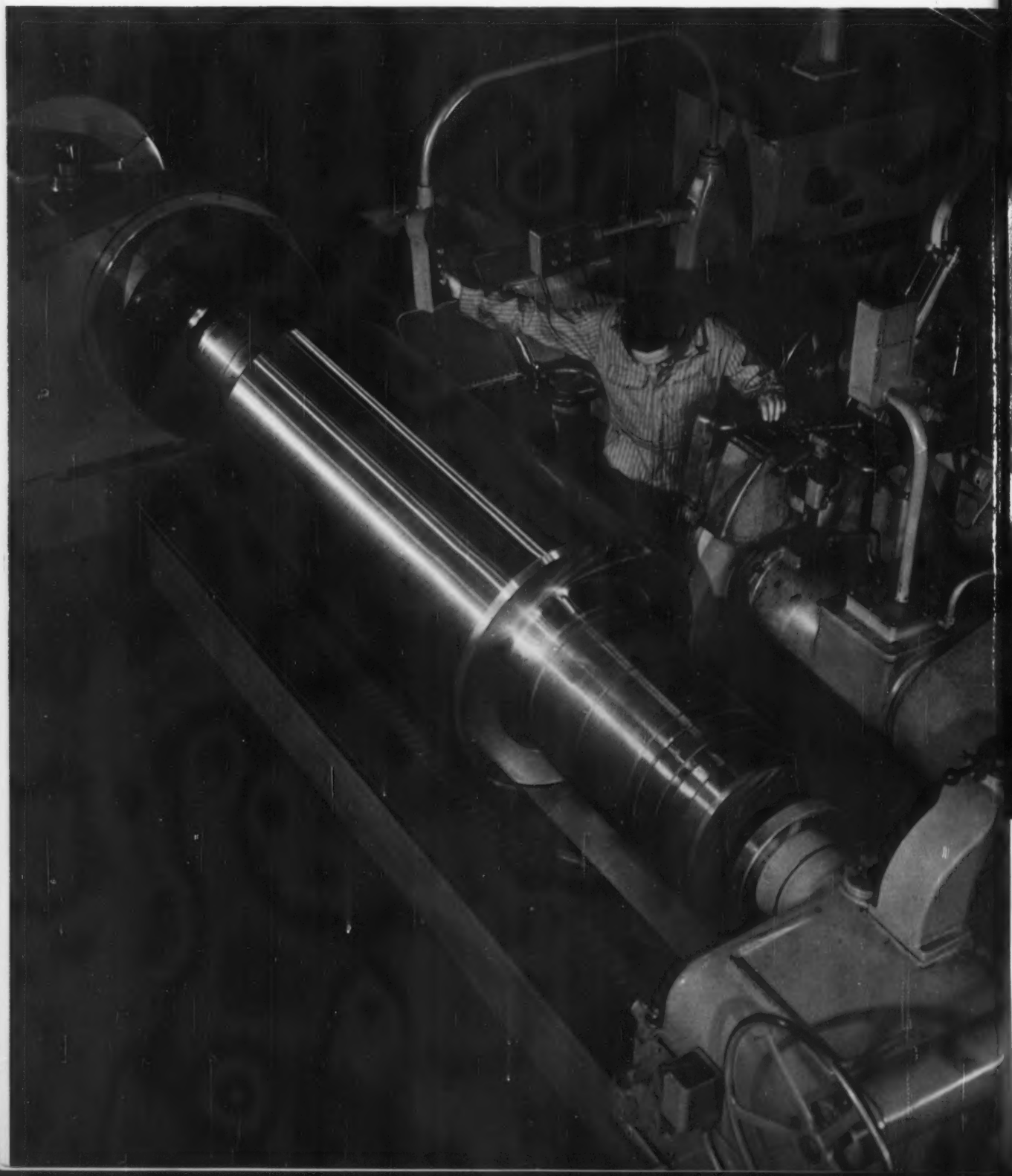
Through successive steps of forging, treating, and machining, the ingot gradually became the glistening shaft you see above. As shown here in a Bethlehem machine shop, the 62-ton forging is about 30 ft long.

BETHLEHEM STEEL

BETHLEHEM STEEL

Hardened Rolls Must Have Perfect Finish

Pampered and groomed like a fine thoroughbred, the forged hardened roll is one of the stars of Bethlehem's specialty shops. This 13-ton beauty will be used in the rolling of aluminum foil. The machinist's intense concentration is nothing unusual; Bethlehem rolls are ground and polished with extraordinary care. The goal *has* to be perfection when rolls are made for the processing of sheets, strip, or foil.



Getting a Heavyweight in Shape

Here's how a massive forging looks as it's pounded and squeezed into shape by a 7500-ton press. Glowing hot, the steel is skillfully worked under tremendous pressures, until its ultimate form can be clearly recognized. Machining then removes surplus metal and transforms the rough giant into a finished product. This Bethlehem-made forging, weighing 123 tons before machining, is a turbine shaft for the Rocky Reach Hydroelectric Power Project, Chelan County, Wash.

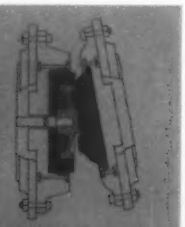
BETHLEHEM STEEL

BETHLEHEM STEEL

Through the Years - Millions of Drop Forgings

Year in, year out, drop and mechanical-press forgings stream from the Bethlehem shops in endless variety. This one, 31 lb as-forged, is part of a clutch housing.

Bethlehem shops are equipped with steam and board drop hammers to 8,000 lb; mechanical presses to 3,000 tons; upsetters to 9 in.



Plan view of typical dies

During the rolling operation, both dies rotate in a vertical plane but have their axes at a slight angle. The mill produces blanks ranging from 10 to 46 in. OD; as-rolled weights, from 100 to 2,000 lb.

Unique Mill Forges and Rolls in a Single Operation

This is Bethlehem's famed circular-products mill, the only one of its kind in the country. In less than one minute, this ingenious device will forge and roll a gear blank, sheave or crane wheel, flywheel, turbine wheel, pipe flange, coupling, or other circular steel shape. The process insures excellent grain flow and machinability, and very high strength in the finished product. Virtually any grade of steel can be handled—carbon, alloy, stainless, heat-resistant.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

Folder 674 592 Printed in U.S.A.

All

YOUR METAL PROCESSING COMPOUNDS

...AT A SAVING

...part of Pennsalt's complete metal preparation service

Cutting costs of metal processing chemicals—without cutting corners—is a Pennsalt specialty. The breadth of the Pennsalt line means economy for you, for its completeness permits selection of processing compounds exactly suited for each job, at lowest cost.

These chemicals run the full gamut—over 40 types of metal cleaners . . . a full range of etchants and brighteners . . . descaling and pickling compounds . . . one-operation Fosbond® phosphating agents . . . Foscoat® pre-lubricant coatings . . . Foslube® drawing lubricants . . . Drawcote® deep-drawing lubricants . . . paint strippers . . . strippable vinyl coatings. And supply is always abundant, because Pennsalt makes its own alkalies and other basic materials.

Labor-saving machinery, too. Pennsalt supplies a complete line of automatic processing equipment, custom-built to your specifications.

And personalized service. Pennsalt field men analyze your process, give you detailed recommendations, set up your finishing line and keep it running efficiently by regular service calls.

...a better start for your finish

Pennsalt Chemicals®
ESTABLISHED 1850

Call or write today for a consultation.

Metal Processing Department 697

PENNSALT CHEMICALS CORPORATION

Three Penn Center, Philadelphia 2, Pa.

How Warren Pouyer cut grinding c

Six years as a tool and die maker gave Bay State's Warren Pouyer a basic knowledge of precise metal working problems that many an "expert" would envy. For the last nine years, he has specialized in abrasives and has gained a tremendously wide knowledge of grinding methods and materials.

Moog operator gets heavy, rapid stock removal using Bay State wheel to grind eye of automobile spring leaf.

er
g costs 1/3 at Moog Industries

Too many wheels were being used up too fast. That was the basic problem in the spring eye grinding operation at Moog Industries, St. Louis, Mo. A leading manufacturer of truck, trailer and automobile springs, Moog makes a complete line of front-end, chassis parts . . . and in this highly competitive business, keeping grinding costs down is vitally important.

So they called in Warren Pouyer of Bay State distributor Mill Supply & Machinery Company and he spotted the trouble right off the bat: disc grinding wheels of a specification that looked as if it *ought* to be right but wasn't. Pouyer specified the proper Bay State wheel using a semi-friable type of aluminum oxide with a unique combination of grit sizes. Production increased 33% per wheel without loss of operation speed.

Since then, the Bay State wheel has been competitively tested over and over again and it has come out on top every time . . . a tribute to Warren Pouyer's ability to specify exactly the right wheel, in this case the first time, and to Bay State's ability to reproduce a given spec *exactly* and *consistently.*

Warren Pouyer doesn't solve all his grinding problems as quickly as this. Like all Bay State representatives, he's trained to study every problem *thoroughly.* And whether a particular problem has a simple solution or a tricky one, you can be sure *your* Bay State man will stick to it until he works out a practical, economical answer. *Better grinding at lower cost – that is his business.*

BAY STATE
WHEELS of PROGRESS

BAY STATE ABRASIVES

Bay State Abrasive Products Co., Westboro, Massachusetts.
In Canada: Bay State Abrasive Products Co., (Canada) Ltd., Brantford, Ontario.
Branch Offices: Bristol, Conn., Chicago, Cleveland, Detroit, Pittsburgh. *Distributors:* All principal cities.

REPUBLIC STEEL LOCKERS

BONDERIZED for "He-man" Service

Republic Steel Lockers stand up under toughest conditions of "he-man" service. Made of cold-rolled heavy-duty steel, Republic Lockers offer many advantages in durability, efficiency, convenience, protection.

Republic Steel Lockers are Bonderized. This Republic feature provides a superior base for the baked enamel finish . . . protects against rust and corrosion . . . restricts damage due to bumps, scratches, and abrasion of every day service to the site of the injury . . . reduces maintenance costs to a minimum . . . helps build employee morale.

Plan your new or expanded dress-wash-and-change facilities around Republic Steel Lockers. Republic's Berger Division knows how to build the locker quality you need at a competitive price. Call your Republic-Berger representative, or send coupon for facts.

REPUBLIC METAL LUMBER® is a new idea for making special purpose tables, stands, catwalks, racks, scaffolds. It's Republic's Berger Division's new slotted construction angle. Simply plan your assembly, cut METAL LUMBER, join with bolts. Horizontal and vertical slots make adjustment easy. Bonderized and finished with gray baked enamel after fabrication. Shipped in convenient bundles of 10 angles, 10- or 12-foot lengths. Stores in same space as one 2″ x 4″ piece of lumber. Write for catalog.

REPUBLIC'S "KNOW-HOW" SOLVES FABRICATION PROBLEM. Continental Can Company, Chicago, wanted a specially constructed "torture" chamber of rack-type shelving with sliding shelves to accommodate a variety of can sizes and types to weather severe changes in temperature. Republic's Berger Division solved the problem through its contract manufacturing facilities and equipment. In Berger plants many sheet steel products are fabricated for other customers and marketed under the manufacturer's brand name. Republic's fabricating "know-how" provides you with the same high quality you see in Berger Division products—lockers, office furniture, shelving, and steel kitchens. Send a sketch or blueprint with complete specifications. Berger will tell you promptly what their specialized services can do for you.

REPUBLIC MATERIALS HANDLING SPECIALISTS engineered these steel boxes to the exact requirements of the Kropp Forge Company, Chicago, Illinois. Special features include corrugated construction for extra strength, a smooth channel around the top to eliminate dangerous sharp edges, four-way fork channels to simplify handling, and stacking brackets welded to top corners to permit tiering to any practical height. As a result, these boxes save time, space, and money in handling and shipping operations. New materials handling ideas from Republic may help you gain similar advantages. Send coupon for facts.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. IA-6443R
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Please send more information on the following:

- ☐ Republic Steel Lockers
- ☐ Republic Fabricating Facilities
- ☐ Materials Handling Equipment ☐ METAL LUMBER

Name_____ Title_____

Company_____

Address_____

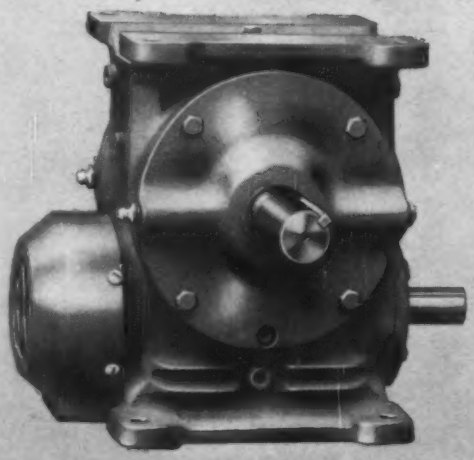
City_____ Zone____ State_____

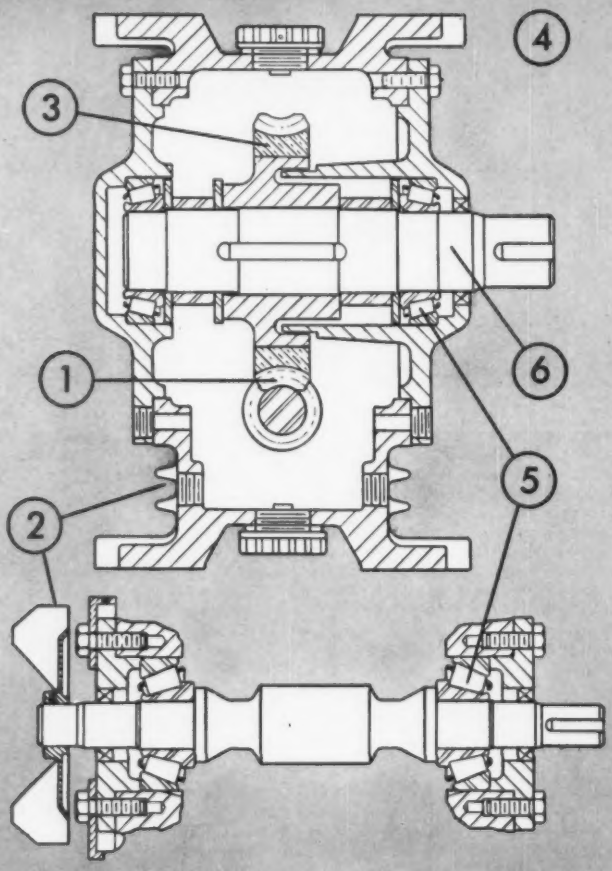
DELROYD

VERSO WORM GEAR
SPEED REDUCERS

a new standard in worm gear design

smaller space and more horsepower per dollar





Make this value analysis NOW!

1. Involute helicoid thread form has highest load capacity of any type of worm gear.

2. Fan cooling and ribbed construction give maximum effect of heat dissipation.

3. Centrifugally cast bronze dished gear—dry well construction.

4. Unit may be mounted in any position. Alternate mounting surfaces.

5. Tapered roller bearings used throughout—provide maximum load capacity.

6. Heat treated alloy steel gear shaft with bearing and sealing diameters provide a strength of 185% of an untreated shaft of the same diameter.

Send for Catalog No. 5018

DE LAVAL *Steam Turbine Company*

899 Nottingham Way, Trenton 2, New Jersey

DL444

ANOTHER OF THE GARLOCK 2,000

LET 'EM ROLL . . .

fully protected by Garlock KLOZURE* Oil Seals

Each mammoth roll of a rolling mill is precisely designed and balanced. KLOZURE oil seals help maintain that balance through maximum bearing protection.

GARLOCK KLOZURE 142A—designed primarily for steel mills to seal surfaces perpendicular to shaft such as at end of mill roll. Acts as initial seal, keeps excessive water, scale, and other foreign matter from bearing oil seals. Available in any length for any diameter over 12″. Comes in straight strip with strap for fastening. Maximum surface speed 5000 fpm, temp. 250° F. constant.

GARLOCK KLOZURE 2782—Positive oil seal protection for steel mill bearings. Garter spring holds Buna-N sealing element in contact with shaft. Precision formed case molded to sealing element protects seal from damage, and provides a press fit for proper installation. Available normal to high speed use on shafts to 48″ dia., temperatures to 250° F, and for applications involving low pressure differentials.

It's easier to find the KLOZURE Oil Seal for your job because Garlock has one of the largest stocks available. Moreover, for any sealing problem, you can choose from the Garlock 2,000 . . . two thousand different styles of packings, gaskets, and seals. The only complete line. Call your Garlock representative or write for KLOZURE Catalog 20.

*Registered Trademark

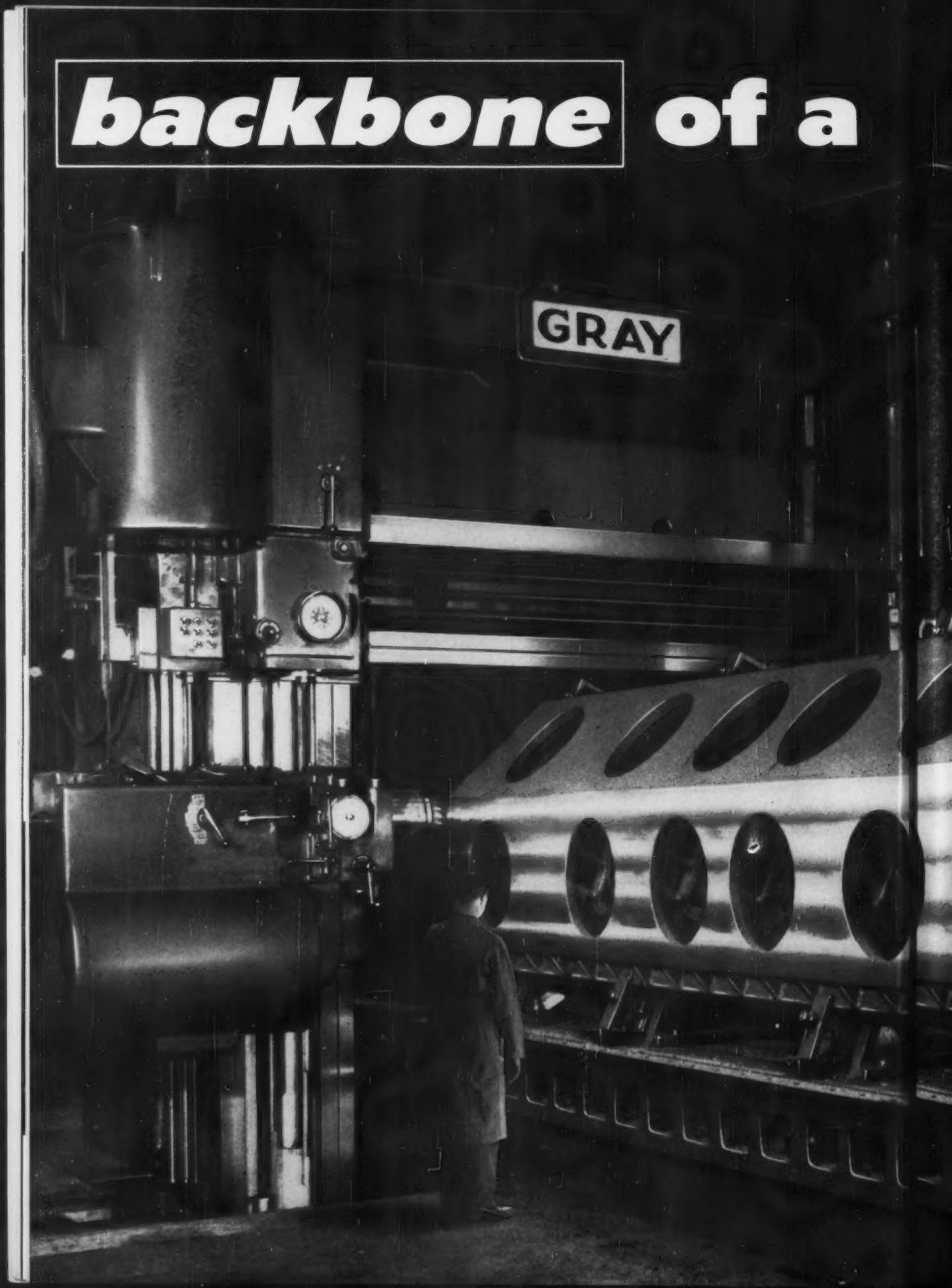
THE GARLOCK PACKING COMPANY, Palmyra, New York

For Prompt Service, contact one of our 30 sales offices and warehouses throughout the U. S. and Canada

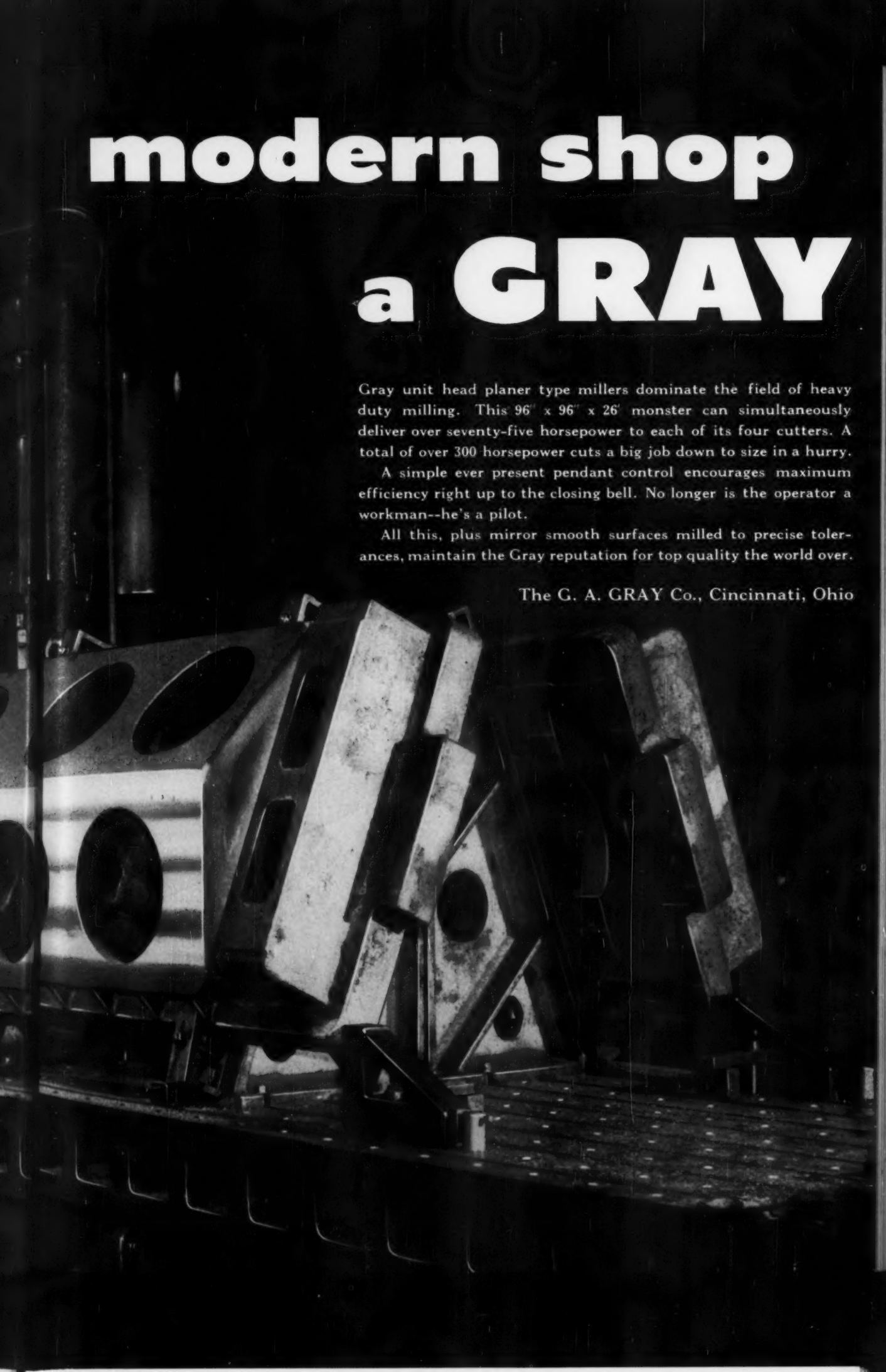
GARLOCK

Packings, Gaskets, Oil Seals, Mechanical Seals, Molded and Extruded Rubber, Plastic Products

backbone of a



modern shop a GRAY



Gray unit head planer type millers dominate the field of heavy duty milling. This 96" x 96" x 26' monster can simultaneously deliver over seventy-five horsepower to each of its four cutters. A total of over 300 horsepower cuts a big job down to size in a hurry.

A simple ever present pendant control encourages maximum efficiency right up to the closing bell. No longer is the operator a workman--he's a pilot.

All this, plus mirror smooth surfaces milled to precise tolerances, maintain the Gray reputation for top quality the world over.

The G. A. GRAY Co., Cincinnati, Ohio

The Norton Measure of Value . . . the true measure of savings on materials you buy for your production is the cost-per-piece produced.

Call your Norton Man — he has the experience, the products, and knows how to save you money where it counts. There's a Norton expert in the fields of — abrasives . . . grinding machines . . . refractories.

You can produce greater savings than you can buy

The economic truth of the above statement applies to all manufacturing and is especially true in grinding wheels.

There are less expensive grinding wheels than Norton wheels — and on the invoice they may look like a bargain. But if the wheels purchased fail to perform efficiently on the production line or incur production delays because of poor quality or misapplication — a higher cost of production is the price actually paid.

In brief, *the true measure of grinding wheel value is not how much you paid for it — but how much you get from it. Here is what you can get from Norton —*

Norton Company gives you the most advanced research engineering and manufacturing facilities in the entire abrasive field — and you get this great scope of detailed knowledge on a personal basis — your Norton Man.

Your Norton Man starts his career by spending a minimum of 1 year in a carefully planned training course in the Norton plant and a comparable period of training in the field. The Norton Man has an average of 15 years abrasive experience in addition to the specialized training. He is the most knowledgeable man in abrasives that you can consult. He is your consulting abrasive engineer.

He will make a free Abrasive Requirement Study for you. This study lists the correct specifications for each abrasive job in your plant to assure you lowest cost-per-piece produced. He is also available for complete field testing on specific problems.

For example, your Norton Man can increase production by pointing out ways to better wheel usage and fewer wheel changes. He has the widest selection of grinding wheels in the industry to help him select the perfect wheel for new product grinding operations and improving your current grinding jobs — both at the lowest cost. And with Norton grinding wheels you can be sure of precise duplication order after order.

Norton offers true abrasive economy. Economy that pays off in lower cost-per-piece produced. Call your Norton Man. NORTON COMPANY, General Offices, Worcester 6, Massachusetts.

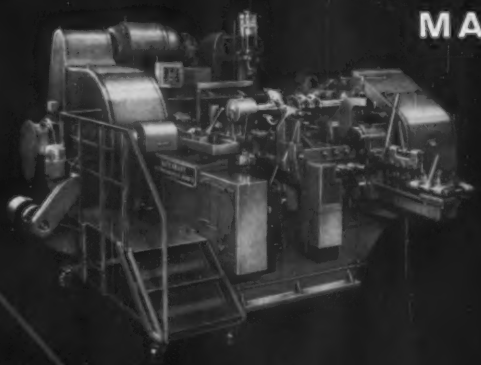
W-1891

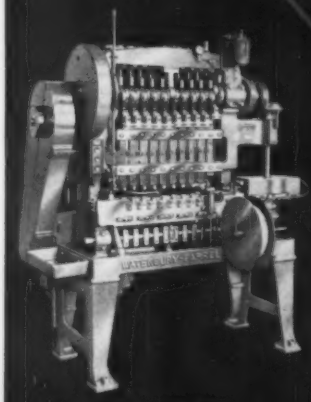
NORTON

ABRASIVES

MAKING BETTER PRODUCTS TO MAKE YOUR PRODUCTS BETTER

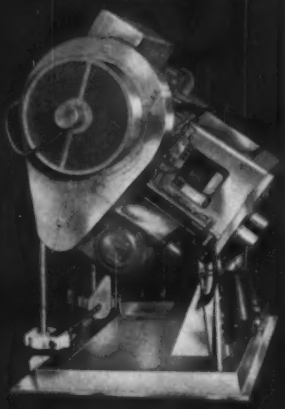
COLD HEADING
MACHINERY





WATERBURY FARREL
MACHINERY BUILDERS

POWER
PRESSES



EYELET,
SLITTER
& WIRE
MACHINERY

ROLLING MILL
MACHINERY

THE WATERBURY FARREL FOUNDRY & MACHINE CO.
DIVISION OF TEXTRON INC.
Waterbury, Connecticut • U.S.A.
Sales Offices: Chicago • Cleveland • Los Angeles • Millburn, N. J.

WF-55

Specify your finish...

enforce it with the Brush Surfindicator!

With the Brush Surfindicator you can hold finishes *exactly* to specifications. No costly rejects. You get a specification finish at minimum cost! The Brush Surfindicator with its full range of accessories precisely measures any finish regardless of whether it's rough, smooth, in a hole, on a concave or convex surface—even on a razor edge.

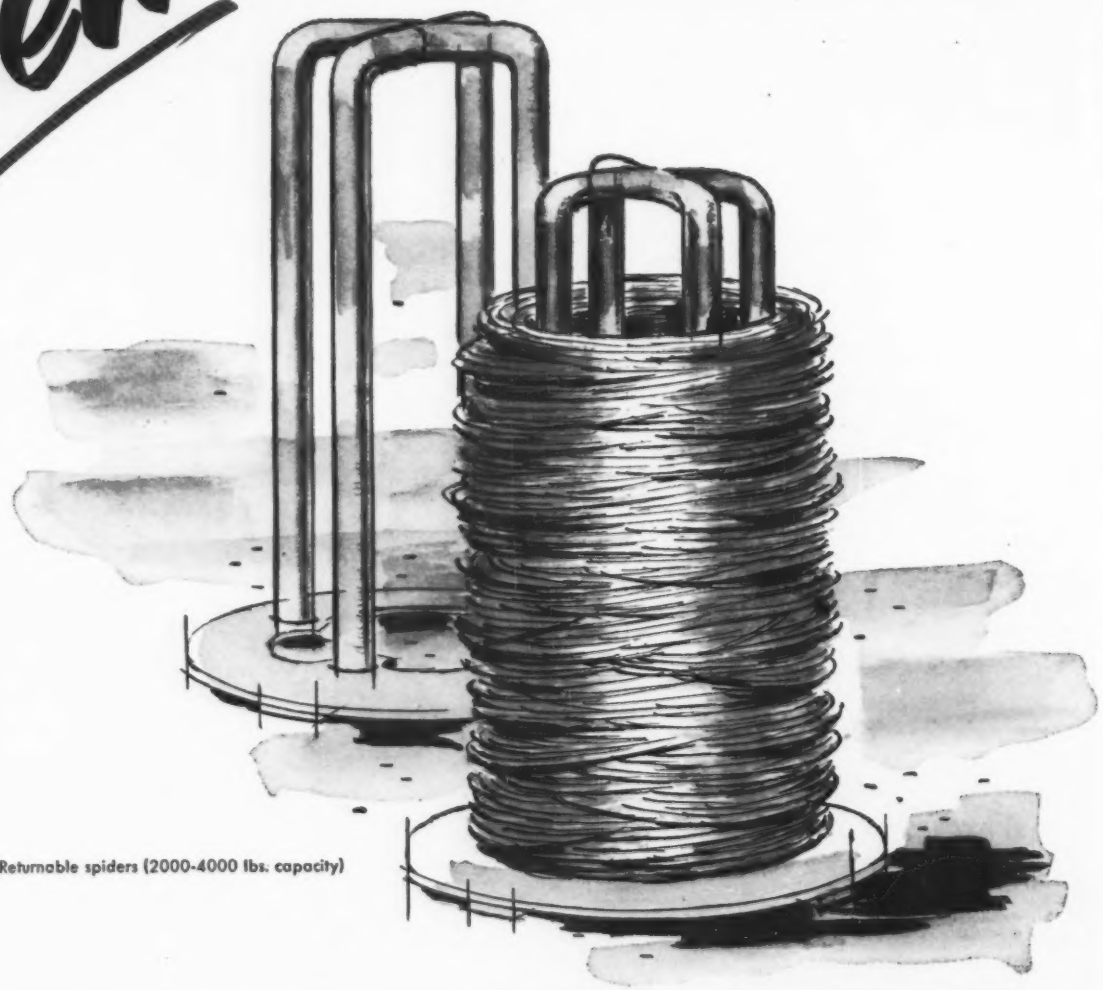
Write for booklet "Control the Finish and You Control the Costs." Factory-trained distributors in all major cities.

brush INSTRUMENTS
DIVISION OF
37TH AND PERKINS CLEVITE CORPORATION CLEVELAND 14, OHIO

Our Cost Challenge!

Just invite us to bring the Surfindicator into your plant—put it to work on a machine—and we will prove that we can reduce your rejects. We're ready now!

New 3000-4000 lb.



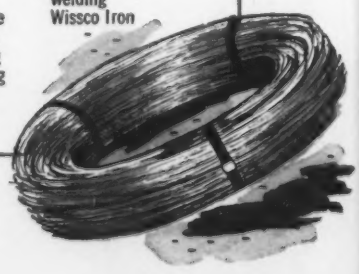
Returnable spiders (2000-4000 lbs. capacity)

Here is a partial list of the many types of carbon steel wire manufactured by CF&I:

Grades	Finishes
low carbon	bright dry drawn or lime bright
annealed	bright grease drawn
flat and shaped	cadmium coated
medium high carbon	coppered
	extra clean
high carbon	smooth bright
flat and shaped	galvanized
oil tempered	liquor
spheroidized	white liquor

Standard Types (partial list)

aircraft cord	fuse	merchant	square
bee	Gamma spring	nail	stapling
bobbin ring	garment hanger	oil tempered	staple
bobby pin	glass netting	picker tooth	stone
bookbinder	hair pin	picture cord	tie
broom	hat	pin ticket	twisted & laid
brush	hose, reinforcement	regulator	upholstery
casing	hose, mechanical	rope	valve spring
clip	hose, vacuum	safety pin	weaving
concrete reinforcing tie	lock spring	screen	welding
cotter pin	lockwasher	shaft, flexible	Wissco Iron
curtain spring	manufacturers' drawn	Signal Corps	
die spring	mattress	snake fishing	
fine & weaving		spiral binding	
		spring	



Steel strapped coils (200-2000 lbs.)

WHEN YOU NEED WIRE . . . MAKE

CONTINUOUS WIRE "SPIDER"
. . . cuts downtime as much as 15%
. . . reduces scrap loss

Here's what CF&I's new giant package did for one upholstery spring manufacturer who had been using 700-lb. wire coils:

- **Downtime was reduced**
- **Production was increased 15% per shift**
- **Men and materials handling equipment were freed for other work**
- **Scrap losses were reduced**

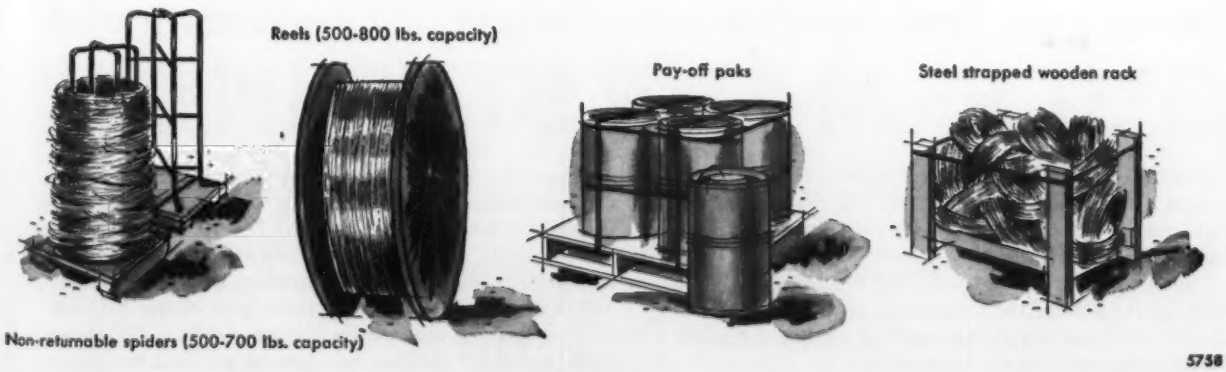
These returnable spiders will cut your production costs, too. If your manufacturing process is not equipped to use spiders, order our 200-2000 lb. continuous-length, steel-strapped wire coils. (Sizes #13 AWG and coarser apply for both spiders and coils.)

From spools to spiders . . . CF&I's newly modernized and enlarged plants are equipped to provide fast delivery on high or low carbon steel wire . . . round, flat or shaped . . . in a wide variety of sizes, tempers, grades and finishes . . . in small quantities or carload lots. Let us know your requirements.

CF&I-WICKWIRE WIRE
THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver El Paso • Ft. Worth • Houston • Kansas City • Lincoln (Neb.) • Oklahoma City • Phoenix • Pueblo • Salt Lake City • Wichita
PACIFIC COAST DIVISION—Los Angeles • Oakland • Portland • San Francisco • San Leandro • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York Philadelphia • CF&I OFFICES IN CANADA: Montreal • Toronto • CANADIAN REPRESENTATIVES AT: Calgary Edmonton • Vancouver • Winnipeg

Other CF&I standard packaging methods



5758

CF&I YOUR SOURCE OF SUPPLY

Lionel gets finer finishes with Gulfcut . . . prevents metal

GULF MAKES THINGS

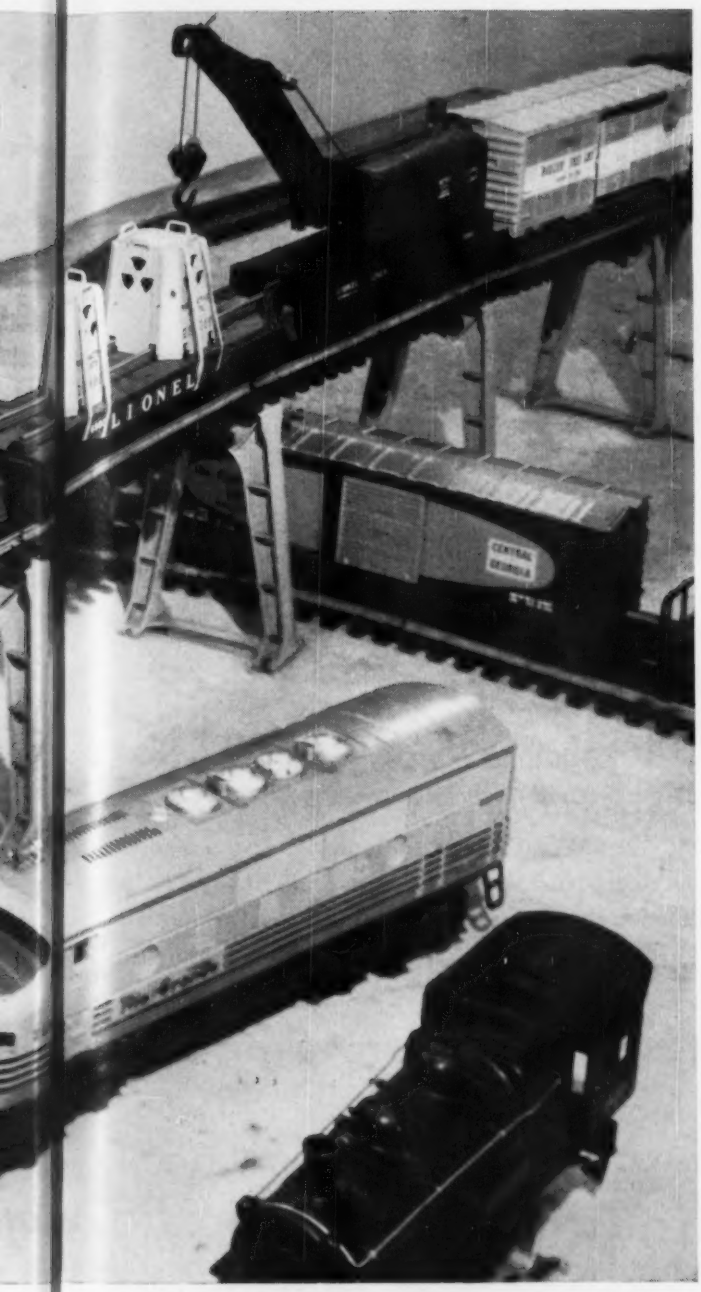
Top calibre machining, use of the right cutting oils, and a rigid inspection system are three big reasons for the high quality of the famous toy trains made by Lionel Corporation, Irvington, New Jersey.

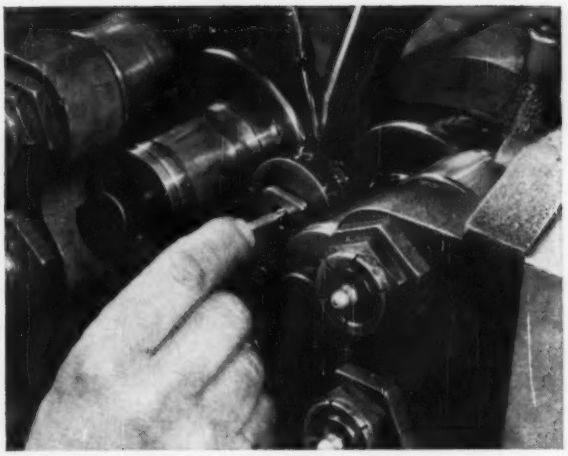
Lionel engineers have found that Gulfcut 31C is the right oil for a great variety of their cutting operations. One in particular stands out—rolling a triple thread on a worm gear shaft for toy locomotives.

Lionel used to cut these gear shafts with a hobber, but decided on the rolling method to increase production and improve finish. For the coolant-lubricant they chose Gulfcut 31C, an oil that meets all the tough requirements of thread-rolling.

Gulfcut 31C has such outstanding anti-weld properties that metal seizure is never a problem in this operation.

Lionel is now producing these gear shafts 5 times faster than with the cutting method. Gulfcut 31C helps them get finer finishes on these shafts and on other machined products, including such diversified items as fishing reels and fuse casings for the Air Force.





Reed Thread Roller at Lionel plant, where Gulfcut 31C is the coolant-lubricant in the machining of worm gear shafts. Triple thread is rolled on a ½" shaft of SAE 1010 Steel.

Sizing up the finished product are Jacques Schindler, right, Gulf Sales Representative, and Thomas Pagano, Chief Engineer, Lionel Corporation.

Wonderful way to run a railroad. Lionel insures top performance in its toy locomotives with high quality machined parts. Gets finer finishes on gear shafts by machining with Gulfcut.

seizing in thread rolling operations...

RUN BETTER!

How about your machining operations? In the complete Gulfcut line, there's a cutting oil to meet your every need. For information just call a Gulf Sales Engineer at your nearest Gulf office. Or mail coupon for illustrated bulletins.

GULF OIL CORPORATION
Dept. DM, Gulf Building
Pittsburgh 30, Pa.

GULF

GULF OIL CORPORATION
Dept. DM, Gulf Building, Pittsburgh 30, Pa.

Send me more information on: ☐ Gulfcut "Regular" Cutting Oils. ☐ Gulfcut Heavy Duty Soluble Oil.

Name_____
Title_____
Company_____
Address_____
City_____ Zone____ State_____

IA-5237

predictable performer . . .

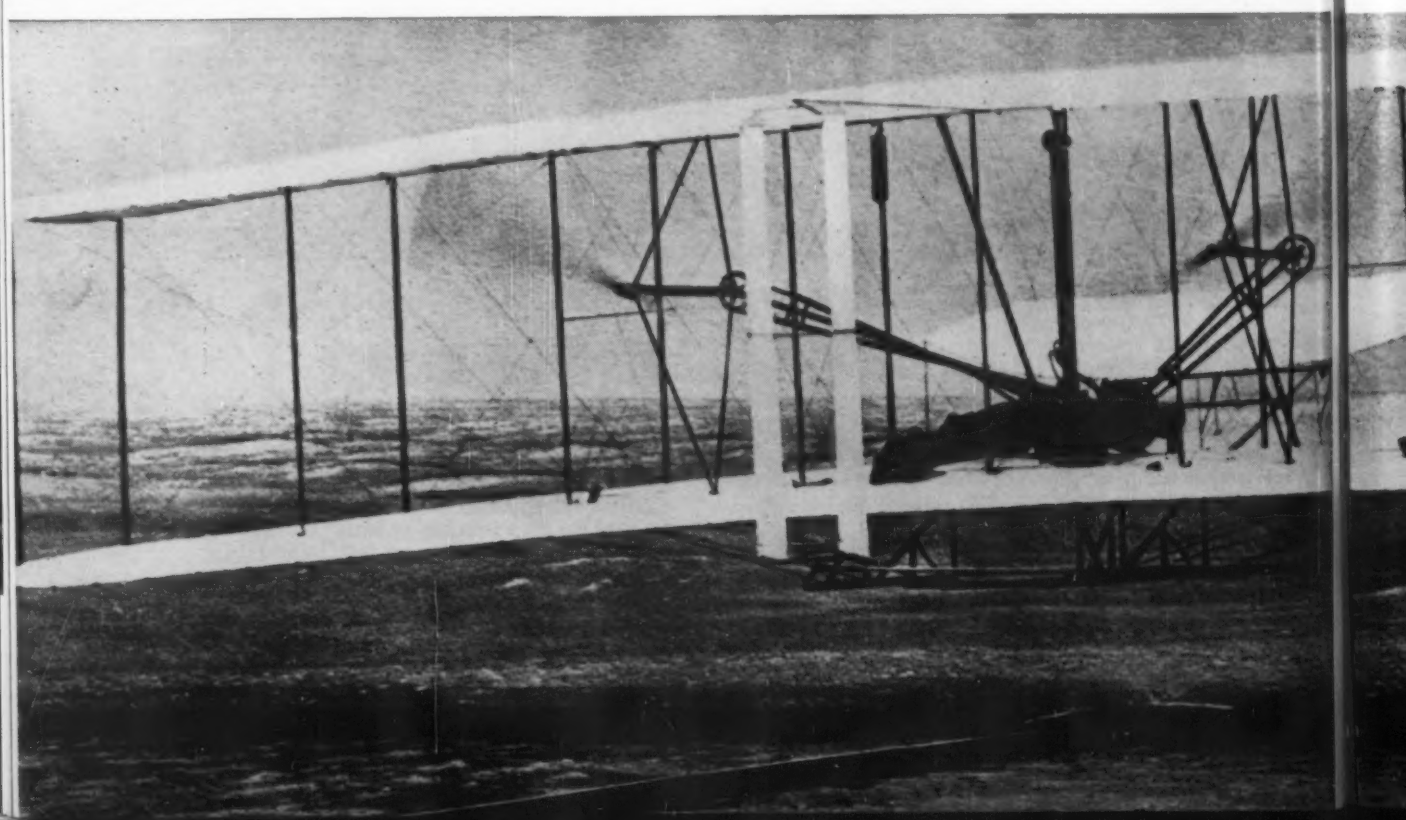
. . . but few believed it until Wilbur and Orville Wright proved it in 1910. Later, Lindbergh—staking his life on the same *predictable performance* first proved possible by the Wrights—flew alone, non-stop across the Atlantic.

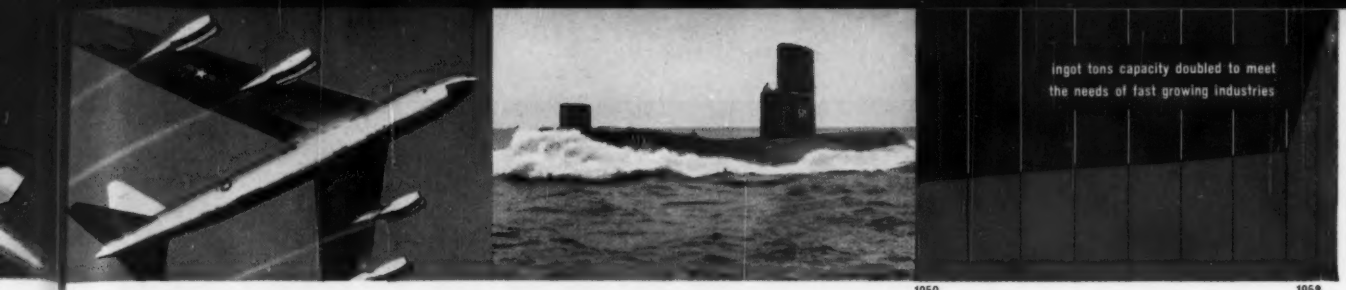
The answer in both cases . . . and still the best answer for today's mighty jets and star-bound missiles . . . vital aircraft components made from uniform, dependable *Carpenter steels.*

The secret of *predictable performance* is in absolute and precise quality control . . . controls first developed in *Carpenter* Laboratories that are now standards for the industry: the Torsion Impact Test, Acid Disc Inspection, Cone Test, the Tough Timbre Test . . . to name a few.

Today, the *Carpenter* MEL-TROL® process—a unique control that utilizes a new, patented ingot mold design—produces steels that approach the ultimate in *predictable performance.*

With this leadership in quality—goes the responsibility of meeting constantly growing demands of the atomic age—more stainless, more tool steels, more specialty alloys. For a company whose history was based on *quality* rather than *quantity,* this was quite a challenge.





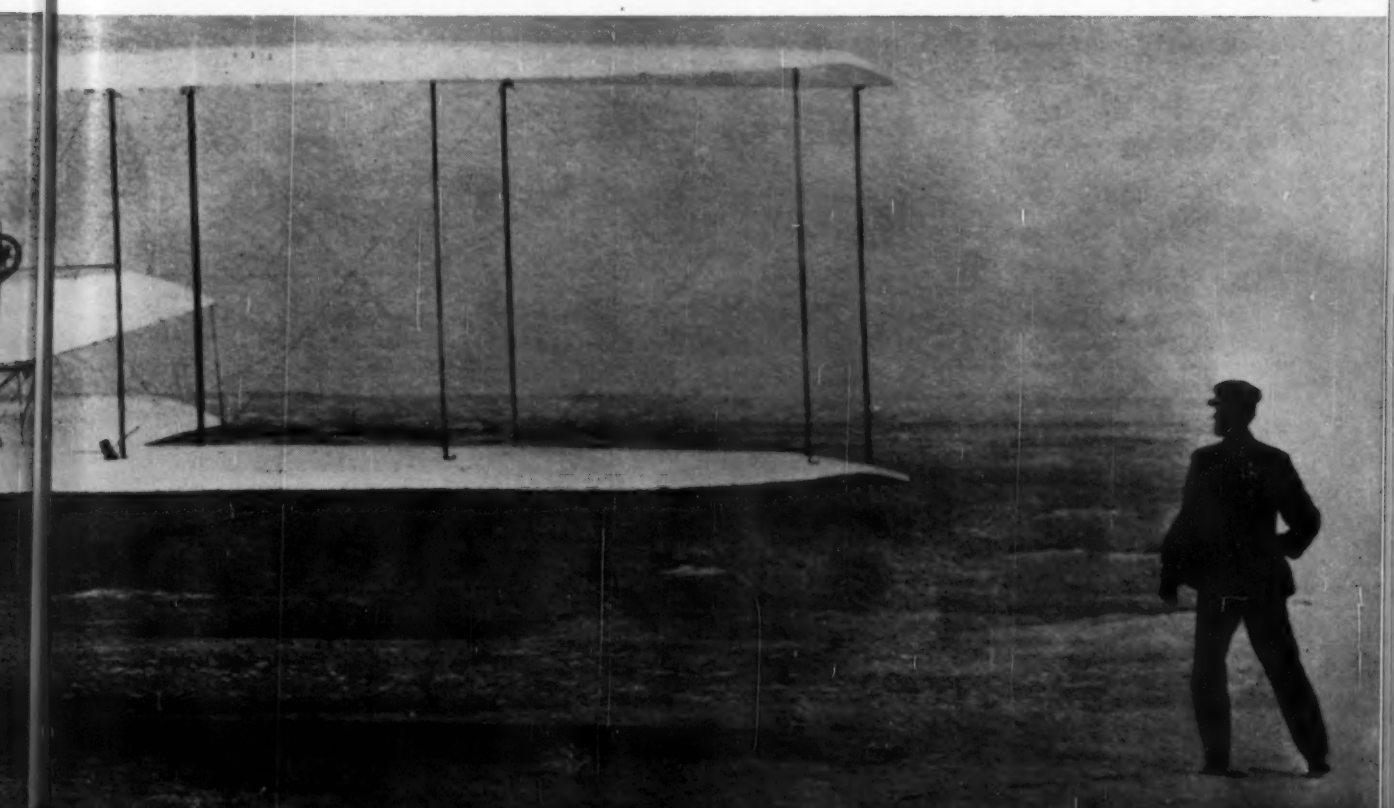
To meet it, *Carpenter* has *doubled its ingot tonnage capacity within the past year* through the acquisition of steelmaking facilities in Bridgeport, Connecticut. New furnaces, mills and finishers—all completely equipped with precise *Carpenter* quality controls—began operation. And capacity—mass production of *predictable performance* specialty steels—is an established fact.

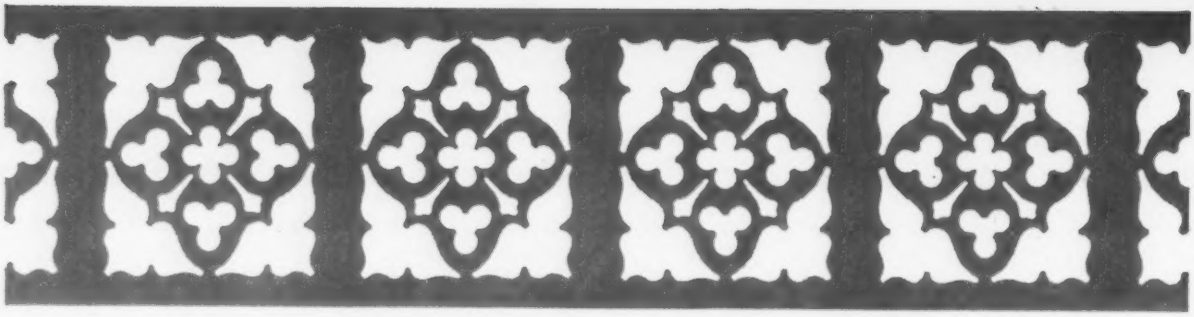
In the years ahead, *Carpenter* will continue to lead the way in quality, and grow apace of industry's ever-increasing demands for the world's finest steels.

tool and die steels
stainless steels
electronic and magnetic alloys
special-purpose alloy steels
valve, heat-resisting and super alloy steels
tubing and pipe
fine wire specialties

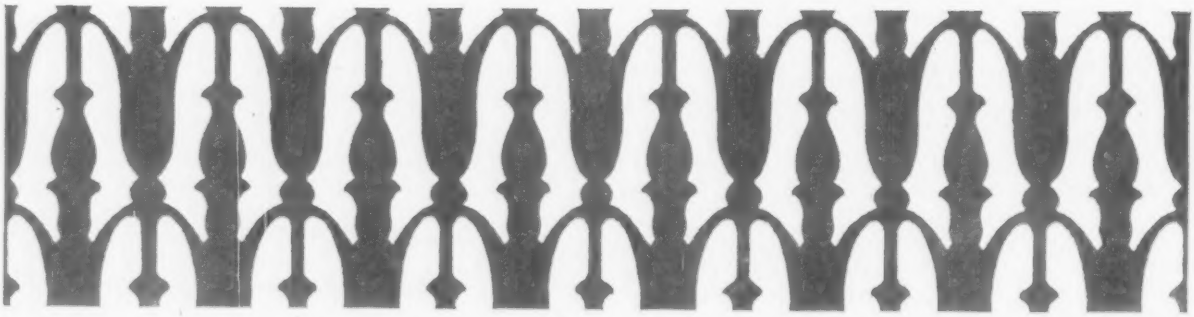
Carpenter steel

The Carpenter Steel Company
Main Office and Mills, Reading, Pa.
Alloy Tube Division, Union, N. J.
Webb Wire Division, New Brunswick, N. J.
Carpenter Steel of New England, Inc., Bridgeport, Conn.

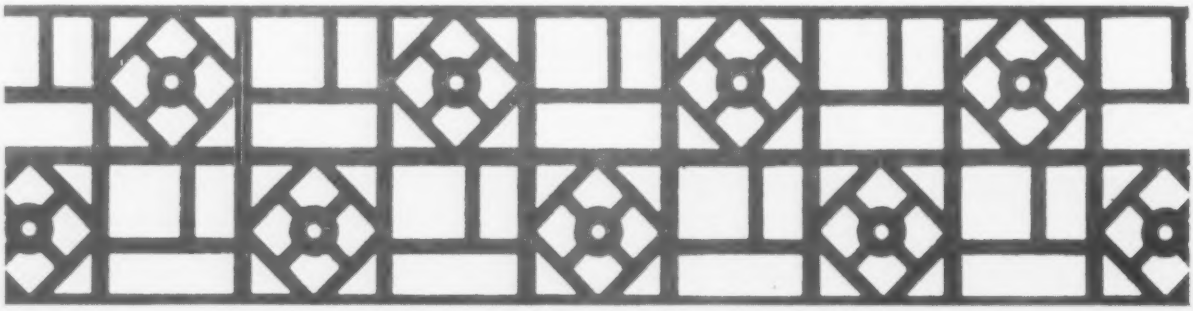




make your design



shine with Hendrick



perforated metal

You may find just the perforated metal to top off your design when you look over the patterns that are exclusively made by Hendrick. These patented patterns are an important part of the Hendrick catalog, which contains more than 100 exclusive designs in all.

Hendrick Perforated Metal is furnished in every available commercially rolled metal. All can be supplied with varying numbers and sizes of perforations, in plain or panel effects.

All combine the functional and the decorative with low cost.

Write for free Catalog from Hendrick . . . the pioneer in perforated metals. This catalog can show you dozens of ways to make *your* design shine.

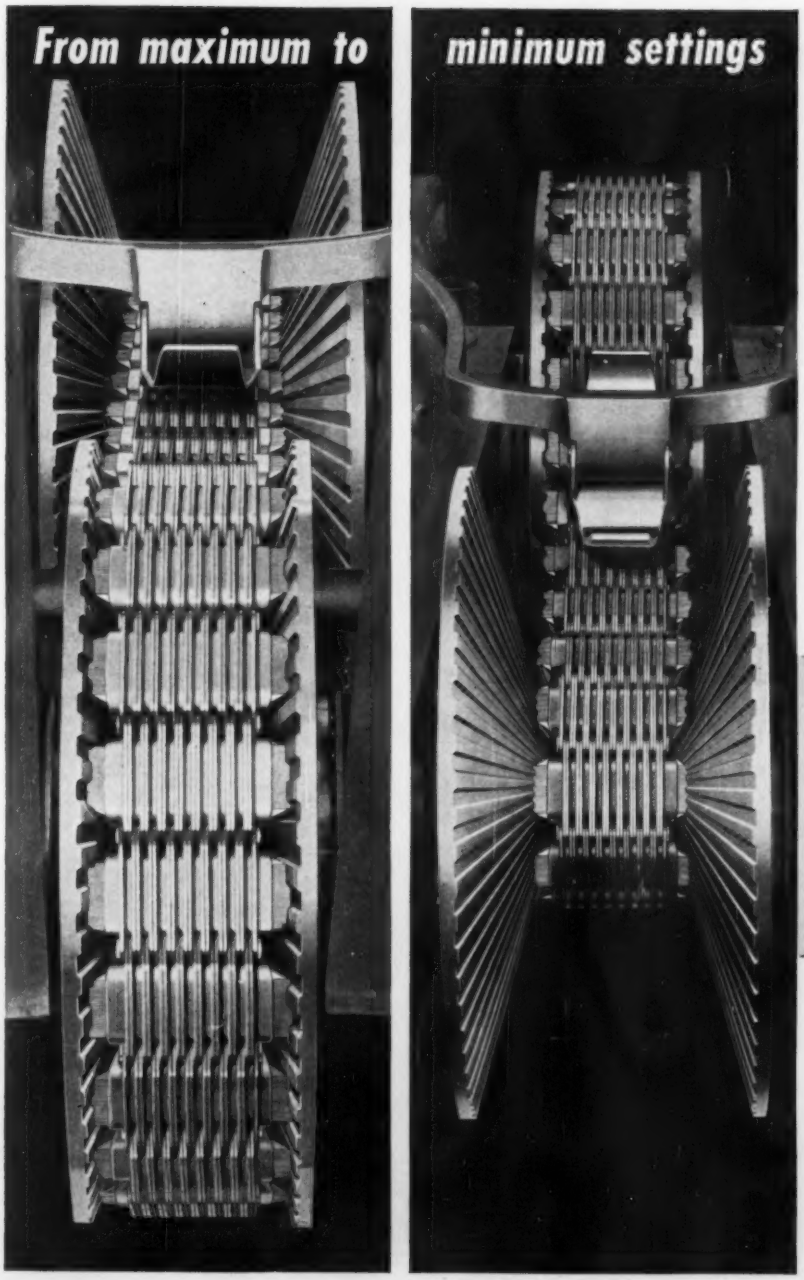
HENDRICK

MANUFACTURING COMPANY *37 Dundaff Street, Carbondale, Pa.*

PERFORATED METAL • PERFORATED METAL SCREENS • WEDGE-SLOT SCREENS • HENDRICK WEDGE WIRE SCREENS • ARCHITECTURAL GRILLES • MITCO OPEN STEEL FLOORING—SHUR-SITE TREADS • ARMORGRIDS • HYDRO DEHAZERS • DISTILLATION COLUMN INTERNALS

For positive, accurate speed control

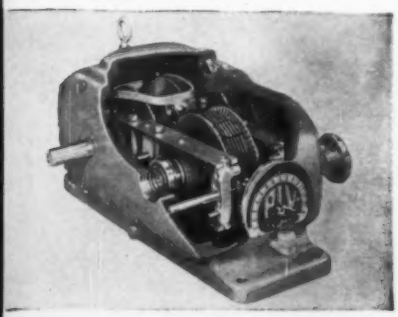
. . . there's nothing like P.I.V.



VARIABLE from top speed to minimum speed with no steps, no stops in between. That's Link-Belt P.I.V.—the *only* chain-driven variable speed drive. Teeth—not tension—permit instant ratio changes with no loss of speed, regardless of load conditions.

Slippage? Not a chance—P.I.V.'s chain-to-wheel grip is positive as a gear. In fact, this is industry's most accurate, most reliable mechanical variable speed drive.

Your Link-Belt office or authorized stock-carrying distributor has Book 2274 on P.I.V. drives from ½ to 25 hp. Refer to the yellow pages of your local phone directory under Power Transmission Equipment.



HOW P.I.V. WORKS. Exclusive self-tooth-forming chain of P.I.V. consists of packs of free-sliding steel slats which serve as teeth. Chain grips beveled grooves on pairs of conical wheels located on input and output shafts. Speeds are changed by varying the effective diameters of the wheels, as shown at left.

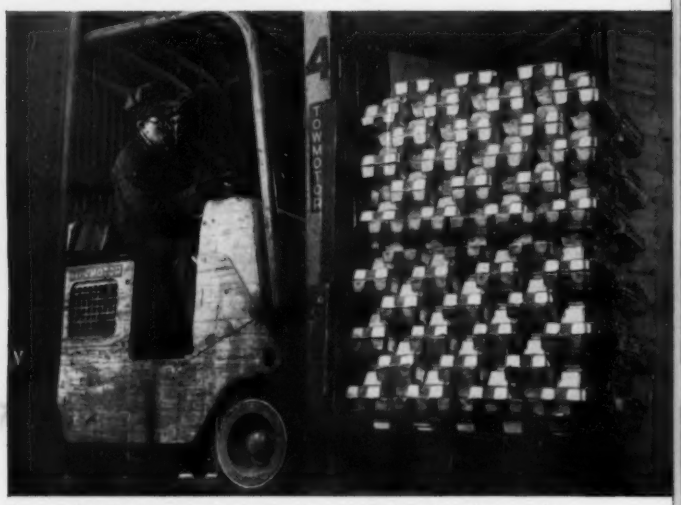
P.I.V. LINK-BELT
VARIABLE SPEED DRIVE

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 14.913

New handling efficiency. Locking one to another to form stable, rigid loads, new Alcan TRI-LOK ingots give you easier, faster handling with a wide variety of equipment . . . safer, more compact stacking. Save time from car unloading to storage and furnace charging.

Additional distribution (Alcan Foundry Alloys:) **Apex Smelting Co.,** Chicago, Cleveland, Los Angeles • **Charles Batcheldor & Co.,** Botsford, Conn.

Free standing. Alcan TRI-LOK ingot bundles maintain their rigidity and stability even when unbanded. This free-standing advantage is a real timesaver in carrying, storing and furnace charging. For Alcan TRI-LOK bundles need no pallets or special slings for pick-up, can be set right on the bare floor . . . safely.



Cuts unloading time. Alcan TRI-LOK bundles take the roughest handling. Interlocking design prevents "rolling" or "fingering" in transit . . . deep grooves keep straps tightly in place. The result: bundles arrive in excellent condition, ready for fast unloading by fork-lift truck. Alcan TRI-LOK bundles save checking time, too. Every bundle is a convenient one-ton, 40-ingot unit.

From Aluminium research . . .

ALCAN TRI-LOK ...a new ingot form especially designed to reduce your handling costs!

From a fabricator standpoint, the new Alcan TRI-LOK ingot may well be the most meaningful advance ever made in aluminum ingot design.

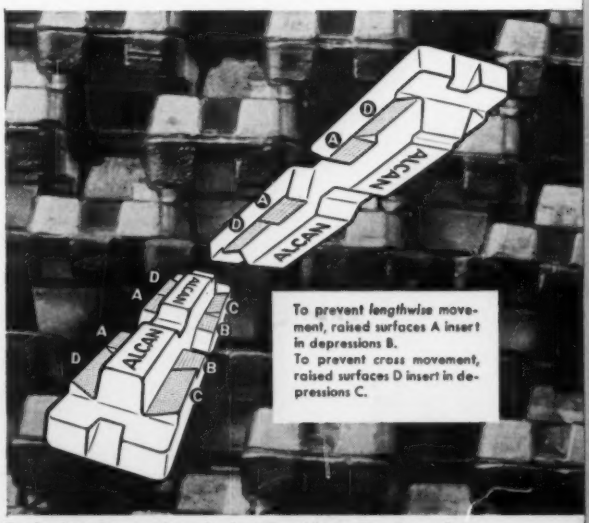
Here's a way to save time in every phase of ingot handling —the new Alcan TRI-LOK ingot!

Newest of Aluminium's ingot developments, Alcan TRI-LOK remelt ingots are especially designed for faster, more efficient handling. You see this handling ease in the safe, stable way the new ingots bundle and stack—locking one to another, not in just one, but in three different ways. The result: measurable cost savings in car unloading, handling and storage operations.

For information on the new Alcan TRI-LOK design—or aluminum in any other ingot form—just call or write your nearest Aluminium Limited sales office.

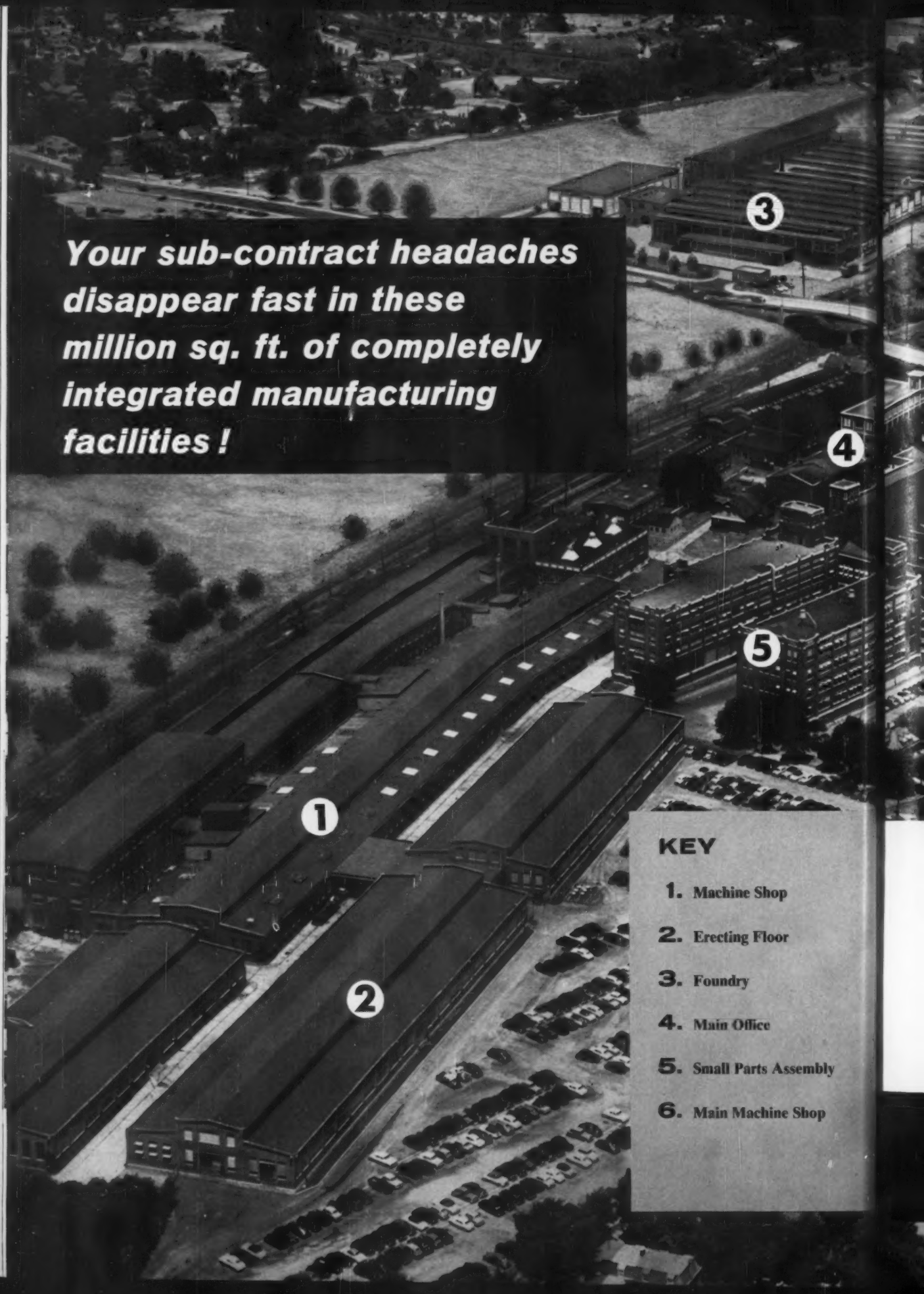
Aluminium Limited

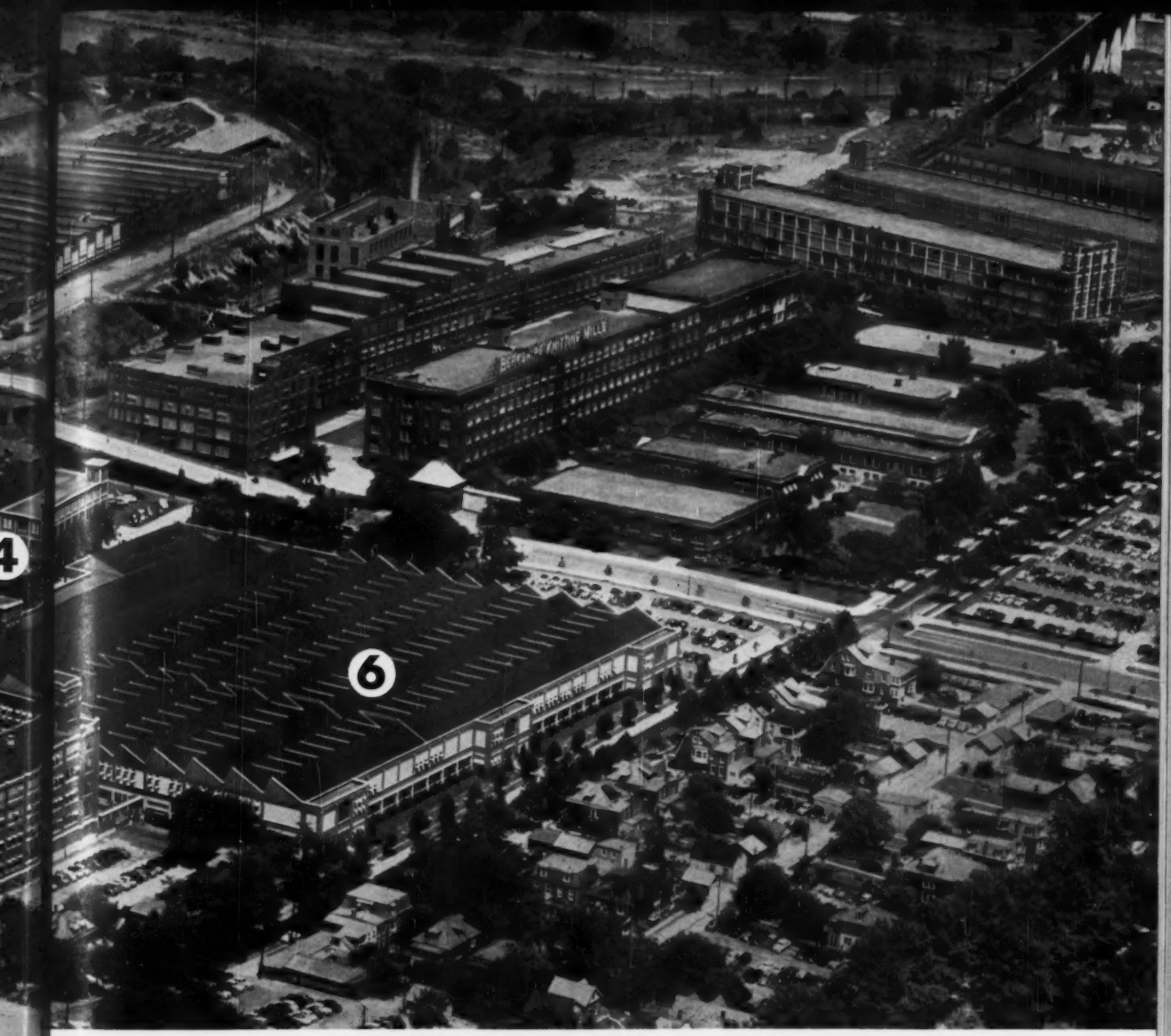
Ingot Specialist...serving
American Aluminum Fabricators—



Exclusive 3-way interlock. The Alcan TRI-LOK design is unique in that it prevents lateral movement of any kind. Within the stack or bundle, ingots are "mated" one to another, actually locking in three different ways. Despite excellent stacking stability, there's never an unlocking problem. *Just lift to separate!*

In the U.S.—Aluminium Limited Sales, Inc., 630 Fifth Ave., New York 20, N. Y. CLEVELAND • CHICAGO • LOS ANGELES • DETROIT • ATLANTA


Your sub-contract headaches disappear fast in these million sq. ft. of completely integrated manufacturing facilities !
1
2
3
4
5
KEY
1. Machine Shop
2. Erecting Floor
3. Foundry
4. Main Office
5. Small Parts Assembly
6. Main Machine Shop



Nothing's quite so important in sub-contracting as *single* responsibility . . . one single responsible source that you can depend on for quality, accuracy, and on-time delivery of your components, assemblies and complete machines.

You get all this when you work with one of the world's largest, most modern and completely integrated manufacturers, whose 65 years' experience in precision (tolerance to 10ths) manufacturing is available to you *now*, on either a short or long-term basis.

Textile Machine facilities include 1200 *modern* machine tools of all types and sizes, a completely mechanized foundry (one of the country's largest), 3000 skilled craftsmen, including a corps of the industry's top designers and engineers.

Combine these facilities with electronic punch card production scheduling controls and quality control techniques—and you've got the perfect answer to all your sub-contract problems . . . right *under one roof*.

For more details, or for latest Facilities File Folder, call or write:

TEXTILE MACHINE WORKS

Contract Division • Reading, Pennsylvania

Hydraulic Cylinder Manufacturer Specifies

Loading a minimum quantity of Ostuco tubing at the Shelby mill — in this instance only 150 feet.

"When you make hydraulic cylinders in 11 bore sizes . . . dozens of different pressure ratings . . . a variety of wall thicknesses and analyses — you've got a man-size tubing inventory problem.

"That's why we switched to Ostuco tubing made to our *exact specifications*. We like its availability in truly *small minimum quantities*. And with its consistently close tolerances, shipment after shipment, Ostuco tubing has *cut our machining time over 50 percent* . . . "

This is an actual case history of a manufacturer with a severe inventory problem. He required special tubing grades in minimum quantities. If you're faced with a similar situation, it's time you contacted your Ohio Seamless representative, listed in the Yellow Pages, or the mill at *Shelby, Ohio — Birthplace of the Seamless Steel Tube Industry in America.*

AA-8843

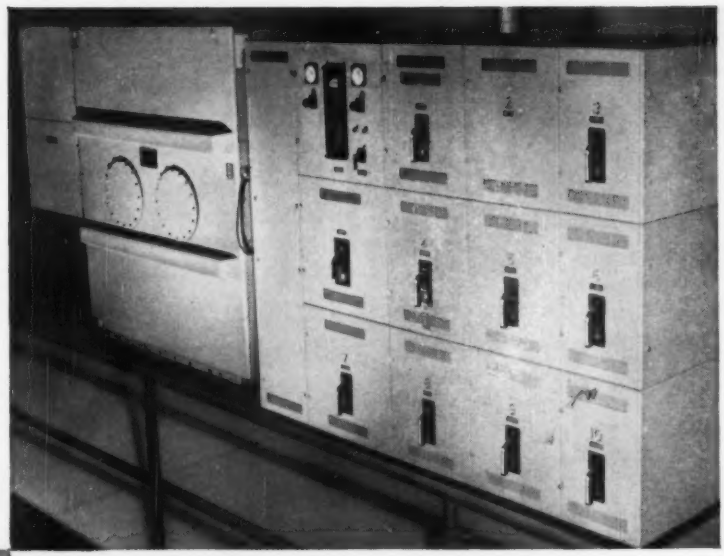
OSTUCO SHELBY OHIO — OSTUCO TUBING

OHIO SEAMLESS TUBE DIVISION

of Copperweld Steel Company • SHELBY, OHIO

Seamless and Electric Resistance Welded Steel Tubing • Fabricating and Forging

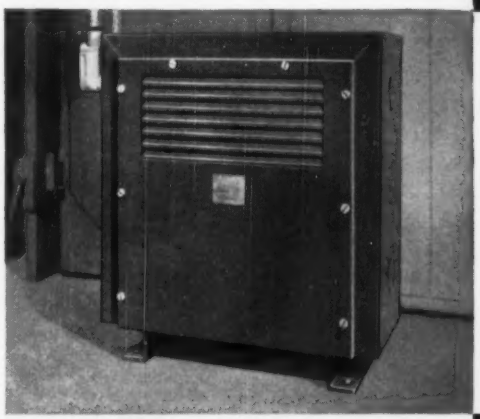
SALES OFFICES: Birmingham, Charlotte, Chicago (Oak Park), Cleveland, Dayton, Denver, Detroit (Huntington Woods), Houston, Los Angeles (Lynwood), Moline, New Orleans (Chalmette), New York, North Kansas City, Philadelphia (Wynnewood), Pittsburgh, Rochester, St. Louis, St. Paul, St. Petersburgh, Salt Lake City, Seattle, Tulsa, Wichita CANADA: Railway & Power Engr. Corp., Ltd. EXPORT: Copperweld Steel International Company, 225 Broadway, New York 7, New York



Wagner

SEALED DRY-TYPE TRANSFORMERS

These modern unit substation transformers can be safely installed in any load-center—any place—because they are hermetically sealed in welded steel cases to provide positive protection from contamination, fire and explosion hazards. The only maintenance needed is periodic checking of gas pressure (inert nitrogen), case and bushings.



Here's Reliable Power

for your plant electrical system

WAGNER LOAD-CENTER TRANSFORMERS

Wagner

INDOCR DRY-TYPE TRANSFORMERS

These new quiet-type transformers are compact, light in weight, provide a flexible, modern power system to change higher voltage distribution service to lower voltage lighting and power circuits. They meet all safety requirements for indoor installation.

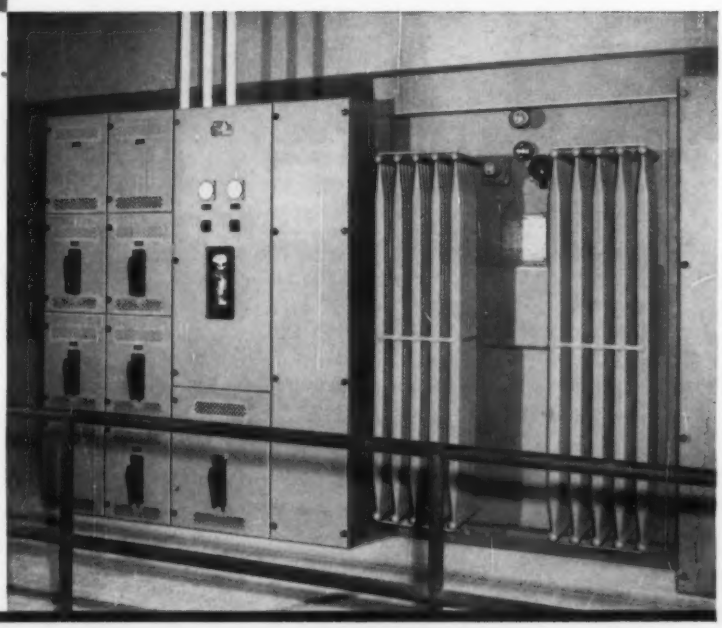
Wagner

NOFLAMOL TRANSFORMERS

Non-inflammable liquid filled. For indoor or outdoor installation. Close-coupled design fits flush against switchgear enclosures, to eliminate and save space. Throat-connected designs are also available.

Bulletins TU-205 and TU-214 give full information on Wagner Load-Center Transformers. Write today.

WT59-2



BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

Wagner Electric Corporation

6403 Plymouth Ave., St. Louis 14, Missouri

SERVING 2 GREAT GROWTH INDUSTRIES . . . *ELECTRICAL . . . AUTOMOTIVE*

LOWER YOUR COSTS... IMPROVE YOUR PRODUCT ...with Selas Automatic Heat Processing

ANNEALING: Incorporating a continuously rotating six-station dial conveyor, this Selas automatic machine anneals a narrow band on stainless steel auto hub caps. Workpieces rotate above a ring of Superheat burners, bringing 2-in. wide band to 1800°F in 30 sec. Production is 600/hr, with one operator loading and unloading. Measuring only 6 ft 6 in. in diam, this compact unit is located directly in the press shop production line.

Selas automatic machines are extensively used for production heat processing operations, including annealing, heat treating, brazing and soldering, forging and localized hardening.

The installations shown on these pages demonstrate how Selas automatic heat processing equipment can:

- increase production speed
- save fuel and operating costs
- minimize in-process inventory
- reduce manpower requirements
- save valuable floor space
- improve product quality

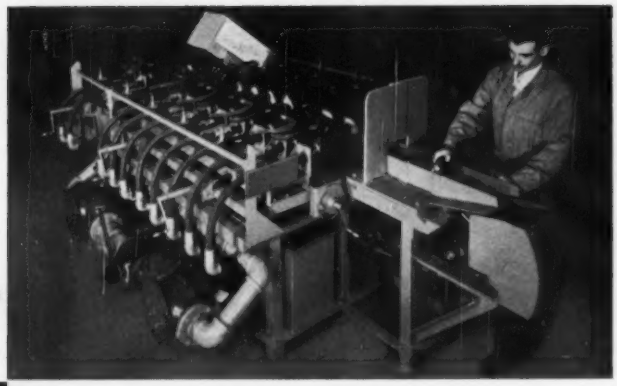
Individually designed and custom-built to meet your specific production requirements and job specifications, Selas automatic machines employ time-proven standardized engineering features for longtime operating dependability and minimum initial cost. In addition, you avoid problems usually associated with divided responsibility since Selas starts-up and services every machine it designs and builds.

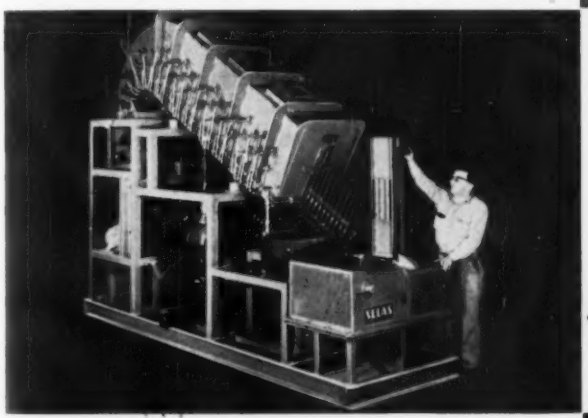
A Selas automatic machine can prove beneficial in your plant. At your convenience . . . without cost or obligation to you . . . a Selas field engineer would welcome the opportunity to survey your needs.

For this personal service—or for literature on any of the heating operations shown on these pages—address Dept. 12, Selas Corporation of America, Dresher, Pa.

SUBSIDIARIES: Selas Constructors, Inc., Houston, Texas; Selas Corporation of America, European Div., S. A., Pregny, Geneva, Switzerland. **INTERNATIONAL REPRESENTATIVES AND LICENSEES:** BENELUX, FRANCE—Cie Gle de Construction de Fours, Paris; CAMBODIA, FORMOSA, KOREA, LAOS, VIETNAM—Cosa Export Co., Inc.; AUSTRIA, GERMANY—Indugas, Essen; JAPAN—International Machine Co., Ltd., Tokyo; ITALY—Italiana Gasogeni E. Forni S.r.l., Milano.

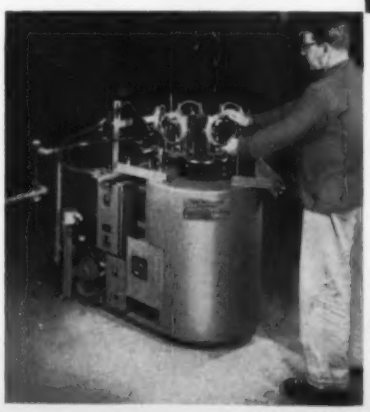
LOCALIZED HARDENING: Selas automatic machine heats, quenches and tempers both faces of sledge-hammer-heads in a continuous operation. Tempering, which previously required hours, is now performed in minutes. Machine handles wide variety of sizes, shapes and weights . . . production rate of a typical 8-lb head is 100 per hr. By integrating the heat-treating function with the preceding grinding step, there is no additional labor cost involved in the operation of the machine.





FORGING: This continuous Selas unit fits compactly into the production line to heat alloy steel bars for forging into C-shaped rail anchors. Production is synchronized with the forging bulldozer, at rates up to 620 bars per hr. Inventory of work-in-process is ⅛ to ¼ of previous equipment . . . 20% less floor space is occupied . . . 95% less scale is formed. Only two operators required for entire process—one to load heating machine, one to operate forge bulldozer. Precise heating assures consistently uniform grain structure and hardness, piece after piece.

HEAT TREATING: 400 motor rotors are heated per hr to 900°F in this automatically controlled machine for: (1) developing electrical and torque characteristics, (2) shrink-fitting on rotor shafts, (3) bluing the outer surface of the turned laminations. With steel and aluminum involved, close temperature control is achieved to avoid melting the aluminum. Machine occupies only 6 ft square floor space . . . replaces gas torch heating units requiring up to 10 times as much fuel, or low-temperature ovens requiring hours of heating time.



BRAZING: A Carboloy cutter is silver brazed to a stainless steel shredder ring used in garbage disposal units, with this compact Selas machine. Precise fixturing, localized high-speed heating and automatic unloading permits one operator to produce up to 200 pieces per hr . . . every piece to pass a 3000-lb load test. Completely shop-assembled at Selas, the package unit was installed in customer's plant, ready for production operations, within hours.

SELAS
CORPORATION OF AMERICA
DRESHER, PENNSYLVANIA
Heat and Fluid Processing Engineers
DEVELOPMENT • DESIGN • CONSTRUCTION
SELAS

peeling machine

hot ingot

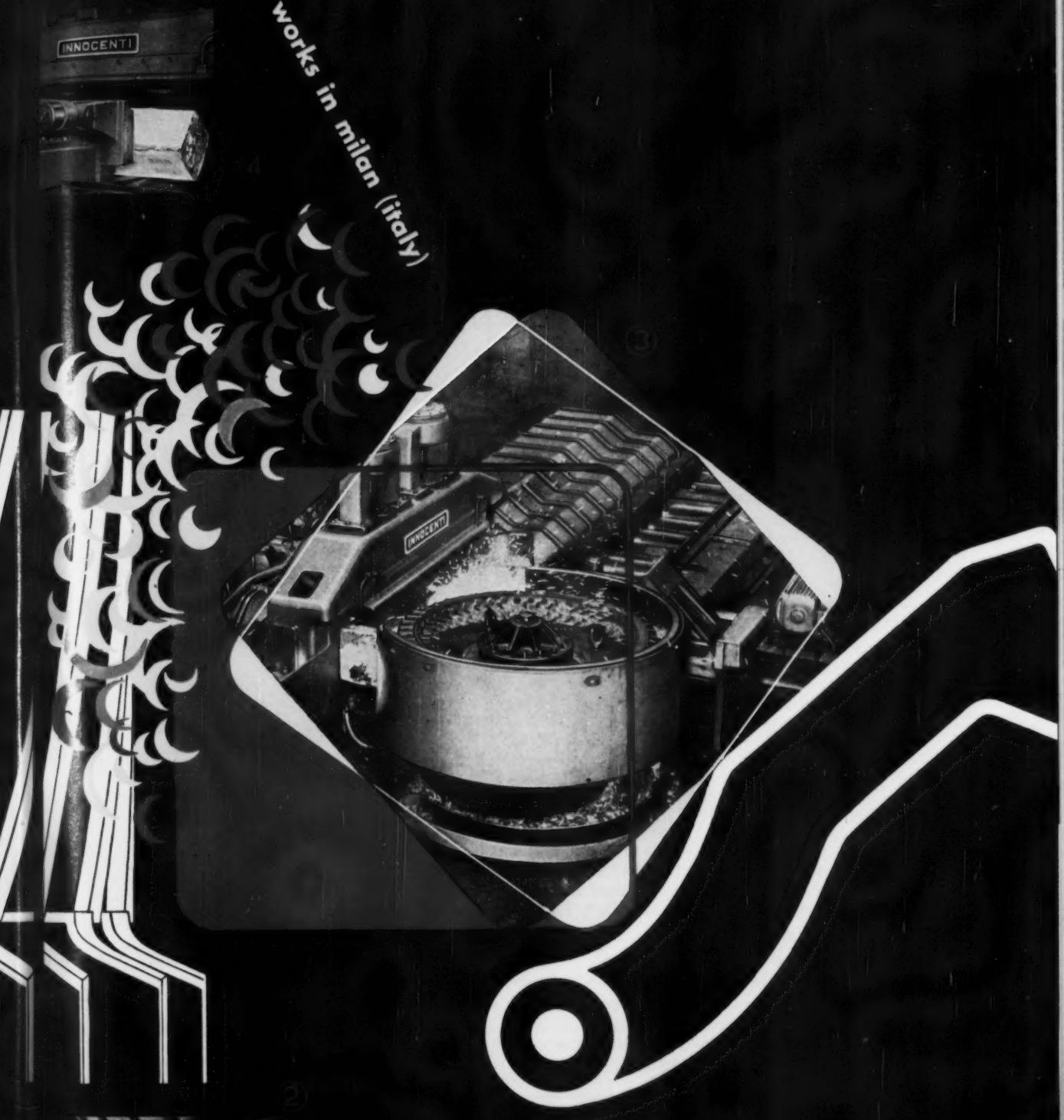
INNOCENTI

INNOCENTI CORPORATION, 45 Columbus Ave

NEW YORK 23, N. Y. • Tel. Columbus 5-7795

bertani s4 58

works in milan (italy)



The hot ingot peeling performed with the special Innocenti milling machine eliminates all the inconveniences connected with the old manual and mechanical systems. The hot milling of the scale by means of a controlled peeling operation affords a technically perfect result which is also economically advantageous. The complete cooling of the ingot between stripping and conditioning is eliminated together with the cracking danger and the annealing necessary to bring the ingot to rolling temperature. After the stripping, the ingot goes to the milling position where is peeled on one side. A manipulator turns over the ingot until all sides one after the other have been peeled. The ingot returns to roller table and thereafter goes to the soaking pits and the roughing mill. The machine is operated automatically; hydraulic controls and safety devices allow a safe and practical use. All types of carbon, alloy and stainless steel can be conditioned without changes in working time. This represents a noticeable improvement as compared with the old systems where the conditioning of alloy ingots was from 2 to 10 times longer than the basic time allowed for carbon steel.

NOW TESTS PROVE... CONTOUR-WELDED* STAINLESS TUBING IS SMOOTHER!

this greater smoothness provides . . . longer fatigue life

Recent tests conducted on different types of full-finished tubing prove that TRENTWELD® tubing—made by the exclusive *Contour-Weld** process—is smoother than tubing made by any other method of manufacture.

TRENTWELD IS SMOOTHER THAN SEAMLESS. The walls of welded tubing generally are smoother than the walls of seamless because welded tubing is formed from uniformly rolled strip steel whereas seamless is extruded from a billet. *The tests confirm this point of difference.*

TRENTWELD IS SMOOTHER THAN OTHER WELDED TUBING. These tests also confirm that TRENTWELD tubing is smoother than any other welded type thanks to *Contour-Welding**, the welding process patented by Trent that virtually eliminates the weld bead.

WHY SURFACE SMOOTHNESS IS SO IMPORTANT. In still other tests, it has been proved that surface smoothness directly affects *fatigue life* —critical in hydraulic and other pressure applications . . . *corrosion resistance*—vital in strong chemical environments . . . *particle incrustation*—which must be eliminated to prevent product contamination.

So, next time you need stainless or high alloy tubing, be sure you specify TRENTWELD. It's also available in titanium, zirconium, Zircalloy and Hastelloy†, in sizes from ⅛ to 40 in. Meanwhile, why not get full details. Send today for the free, 50-page Trent Tubing Manual. Write: Trent Tube Company, Box 2518, Pittsburgh, Pa.

†Trademark of Haynes, Stellite Co.

greater corrosion resistance

less product incrustation

***WHAT CONVENTIONAL WELDING IS**

In conventional welding of tubes, gravity pulls molten metal down inside the tubing to form a bead that is difficult to remove by cold working. And cold working may lead to undercuts, focal points for fatigue cracks and corrosive attacks. Cleaning becomes difficult.

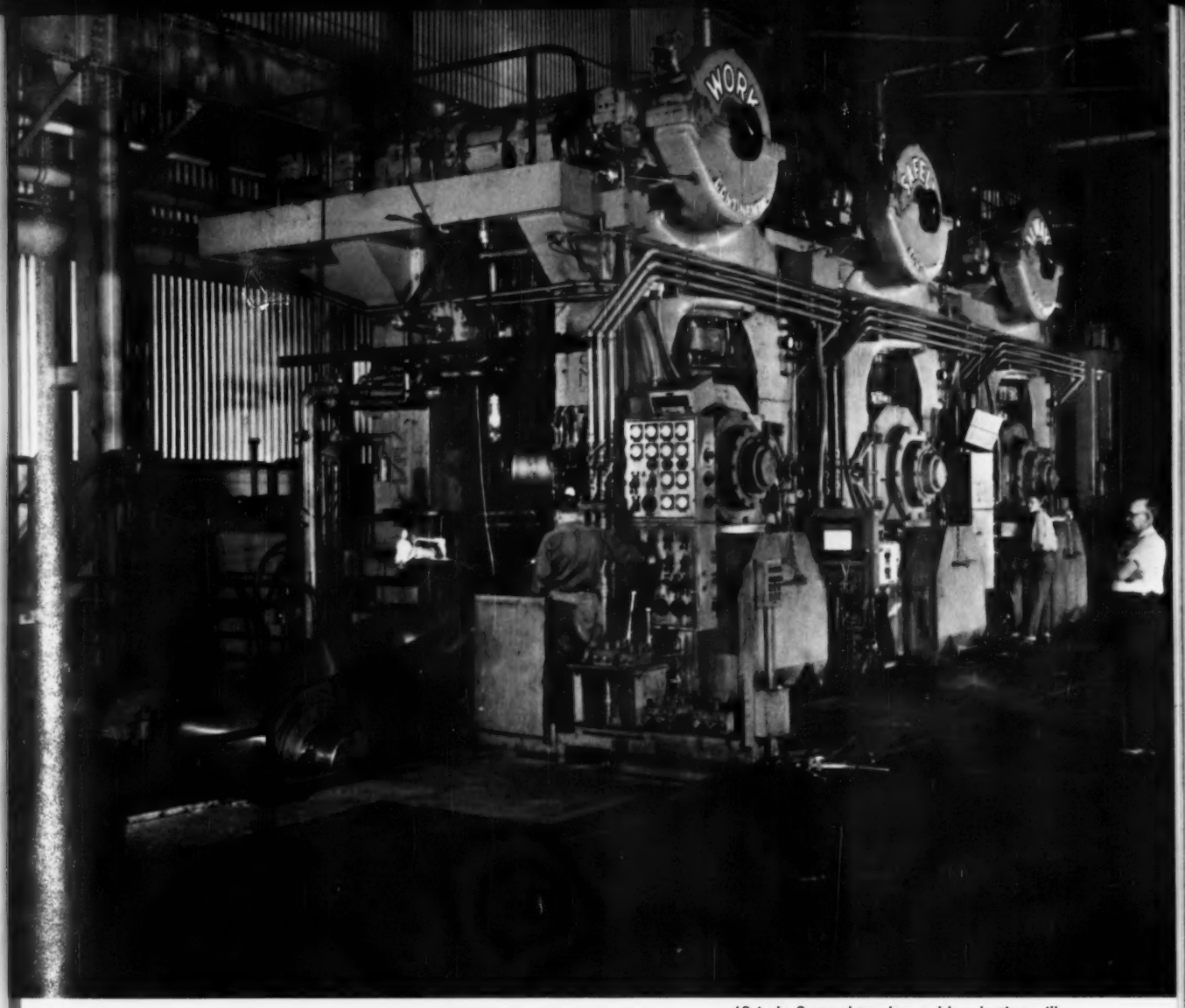
WHAT CONTOUR TRENTWELD IS

With *Contour-Welding* the tube is welded at the bottom. Gravity still pulls the molten metal down, but now the weld area corresponds to the contour of the tube. There's virtually no weld bulge on the inside surface. And even on the O.D., the weld seam more closely conforms to the contour of the tubing.

CONTOUR TRENTWELD

Stainless and High Alloy Pipe and Tubing

TRENT TUBE COMPANY Subsidiary of Crucible Steel Company of America • GENERAL OFFICES: East Troy, Wisconsin • MILLS: East Troy, Wisc.; Fullerton, Calif.



42-inch, 3-stand tandem cold reduction mill.

BLAW-KNOX COLD STRIP MILLS

Blaw-Knox designs and builds all types of cold reduction and temper pass mills for ferrous and non-ferrous work. Other Blaw-Knox equipment for the metals industry includes complete rolling mill installations including all auxiliary equipment for ferrous and non-ferrous metals, iron, alloy iron and steel rolls, Blaw-Knox Medart cold finishing equipment, carbon and alloy steel castings, fabricated steel plate or cast-weld design weldments, steel plant equipment, and heat and corrosion resisting alloy castings.

BLAW-KNOX

BLAW-KNOX COMPANY

Foundry and Mill Machinery Division
Blaw-Knox Building · 300 Sixth Avenue
Pittsburgh 22, Pennsylvania

MESSINGER GEAR BEARINGS

Two Extremes **in Gear Bearings . . . each designed and built for a specific application. Which do you need?**

"FEATHERWEIGHT"

BALL BEARING—EXTERNAL GEAR
11.999" I.D. x 14.562" O.D. x .635" WIDE

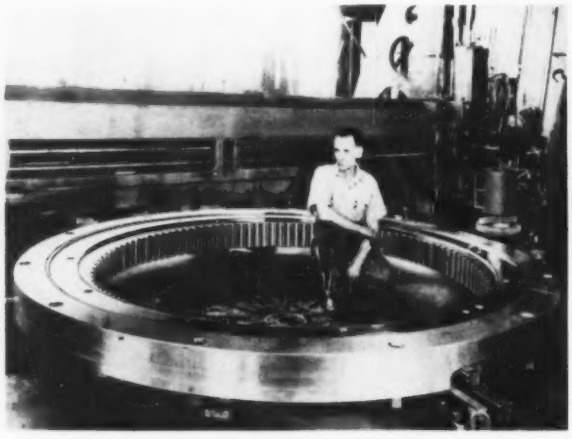
464 TEETH—32 D.P.
14.50" PITCH DIAMETER

STATIC CAPACITY:

RADIAL—9,420 LBS.
THRUST—3,287 LBS.
MOMENT—10,760 IN. LBS.

"HEAVYWEIGHT"

"X" ROLLER BEARING—INTERNAL GEAR
ORIGINALLY BUILT IN 1943
80.812" I.D. x 107.50" O.D. x 7.00" WIDE



122 TEETH—1.50 D.P.
81.33" PITCH DIAMETER

STATIC CAPACITY:

RADIAL—582,821 LBS.
THRUST (One Direction)—2,547,000 LBS.
THRUST (Opposite Direction)—1,273,500 LBS.
MOMENT—27,975,000 IN. LBS.

NOW PRODUCING GEAR BEARINGS OF 160.50" O.D.

Smoothing Industry's Pathway ...*for Nearly Half a Century*

MESSINGER BEARINGS, INC.

D STREET ABOVE ERIE AVENUE, PHILADELPHIA 24, PENNA.

BALL AND ROLLER BEARINGS • FEATHERWEIGHT TO HEAVYWEIGHT

World's biggest dump truck—made with USS "T-1" Steel—hauls 165-ton loads at 35 mph. Western Contracting Corp. conceived the truck, had it designed by Charles W. Jones, engineering firm of Los Angeles. Fabricators of box and frame: Eaton Metal Products Corp., Omaha.

World's biggest truck made 25% lighter with USS "T-1" Steel

Your first impulse is to dive for the ditch when you see this mastodon of trucks roaring down the haul road at Oahe Dam near Pierre, South Dakota. But if you're an equipment builder, you will wonder how they got the tremendous strength necessary without adding too much dead weight.

That was the problem faced by the Western Contracting Corporation of Sioux City, Iowa when they decided to build the biggest possible dump truck. It is an 18-wheel, 750-hp semi-trailer that is currently hauling a payload of 110 yards or 165 tons. The truck is 55 feet long, 16 feet wide and 14 feet high.

25% lighter. To get this high capacity with the least weight, they built the box and frame of USS "T-1" Constructional Alloy Steel. "T-1" Steel had a minimum yield strength of 90,000 psi but is now available at 100,000 psi. Western estimated it saved 12½ tons in dead weight or 25% of the trailer's weight.

Good fabricating properties. Because USS "T-1" Steel can be readily formed and welded, all members could be built up from plates. Reinforcing for the box was formed into channels through which exhaust gases are piped to keep the load from freezing in cold weather.

High resistance to impact abrasion. Dumping a 165-ton load in a few seconds causes terrific abrasion. "T-1" Steel is noted for its ability to take this kind of punishment, and it gives much longer service than ordinary steel.

In addition to 100,000 psi "T-1" Steel, we produce three brands of USS High Strength Steel in the 50,000 psi Yield Point range—MAN-TEN, COR-TEN and TRI-TEN. Each has its own characteristics that make it ideal for certain applications in construction and mining equipment. Find out how these steels can reduce weight, increase strength, and lower your operating costs. Address United States Steel, Room 2801, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

USS, "T-1," COR-TEN, MAN-TEN, and TRI-TEN are registered trademarks

United States Steel Corporation – Pittsburgh
Columbia-Geneva Steel – San Francisco
Tennessee Coal & Iron – Fairfield, Alabama
United States Steel Supply – Steel Service Centers
United States Steel Export Company

United States Steel

USS

First atomic aircraft carrier uses USS Quality Steel Forgings

The Navy is now building the ENTERPRISE, the world's first nuclear-powered aircraft carrier. You won't hear much about it because of security, but if you had visited U. S. Steel's Homestead plant a few weeks ago, you could have inspected two of the parts of the ENTERPRISE'S power system. You see them in the picture—a closure head flange and a top disc for one of her eight reactor vessels. They are USS Quality Forgings.

The top disc will be seated inside the flange and both parts will be welded to other sections to form a single, sealed reactor vessel. The top disc weighs 36,750 pounds and the flange weighs 74,000 pounds. In service, these parts must withstand high pressure and radioactivity. The steel must be of excellent quality.

Manufacture of these Ni-Cr-Mo alloy steel parts included forging, preliminary heat treating and preliminary machining. This was followed by quenching and tempering. Then came a battery of tests: ultrasonic inspection, tangential tensile tests, Charpy V notch impact tests, grain size tests, bend tests and magnetic particle inspection.

These are just two examples of the many forged flanges, discs, rings, heads, cylinders, and bored pipe that United States Steel has produced during the past few years for industrial and marine nuclear applications.

These two forgings have an especially critical job to perform, so they were made by top-skilled men using the finest equipment—the same men and equipment that make *every* USS Quality Forging. We will appreciate your inquiries or requests for our free 6-page booklet on USS Nuclear Forgings. Write to United States Steel, 525 William Penn Place, Pittsburgh 30, Pa. *USS is a registered trademark*

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Export Company

United States Steel

USS

STAINLESS STEEL
RIVETING INFORMATION

*

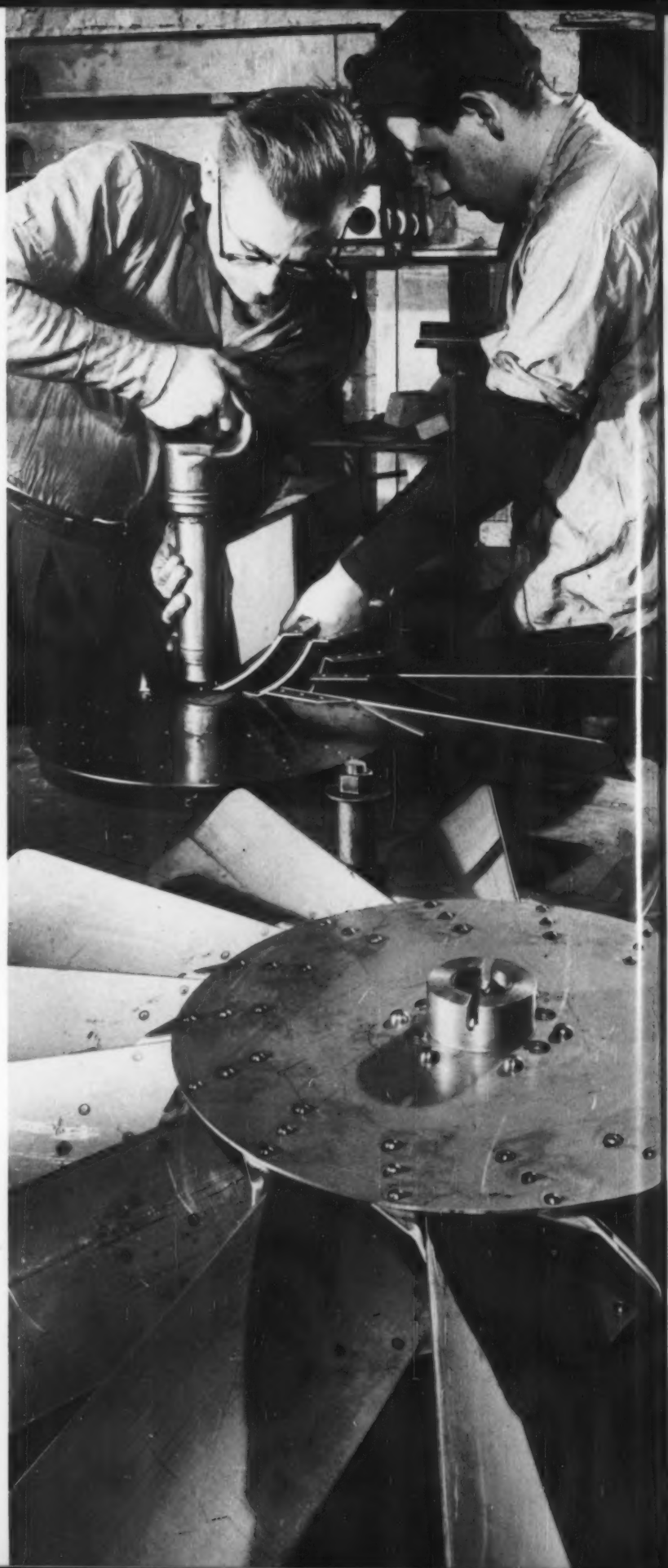
Check for flaws, down by the rivet's side

Make a careful selection and inspection of stainless steel rivet stock. Use only smooth, centerless-ground or cold-drawn stock with a uniform fine-grain structure for maximum toughness and impact strength. Check the heads and sides of the rivets for seams, slivers, splits or other flaws. A white pickle will enable you to detect defects more easily.

Stainless steels are stiffer than carbon steel so you need more power to drive the rivets. A hydraulic riveter is best. If you use a pneumatic hand riveter, increase the air pressure—90 lbs. or more will generally do the job.

Rivet holes may be drilled or punched —*preferably drilled*. If you do punch them, be sure to ream out the holes to remove strained or distorted metal. Allow $\frac{1}{64}$" for clearance. You'll find that stainless steel isn't difficult to rivet, it's just different.

You'll do a good job on *all* stainless steel fabrication when you follow our 130-page manual. If you haven't received your free copy, write on your company letterhead for our "Stainless Steel Fabrication Book," United States Steel, 525 William Penn Place, Pittsburgh 30, Pa. *USS is a registered trademark*



United States Steel Corporation—Pittsburgh
American Steel & Wire—Cleveland
National Tube—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

USS

SIMONDS ABRASIVE CO.

DOUBLE XX

Reinforced Resinoid depressed center wheels for *Fastest grinding* . . . . .

for all portable disc sanders and right angle type grinders

For grinding all kinds of steel, fabricated parts, castings, etc.—weld grinding, deburring, roughing, finishing.

CALL YOUR SIMONDS DISTRIBUTOR

Proven products
Dependable know-how
Quick supply

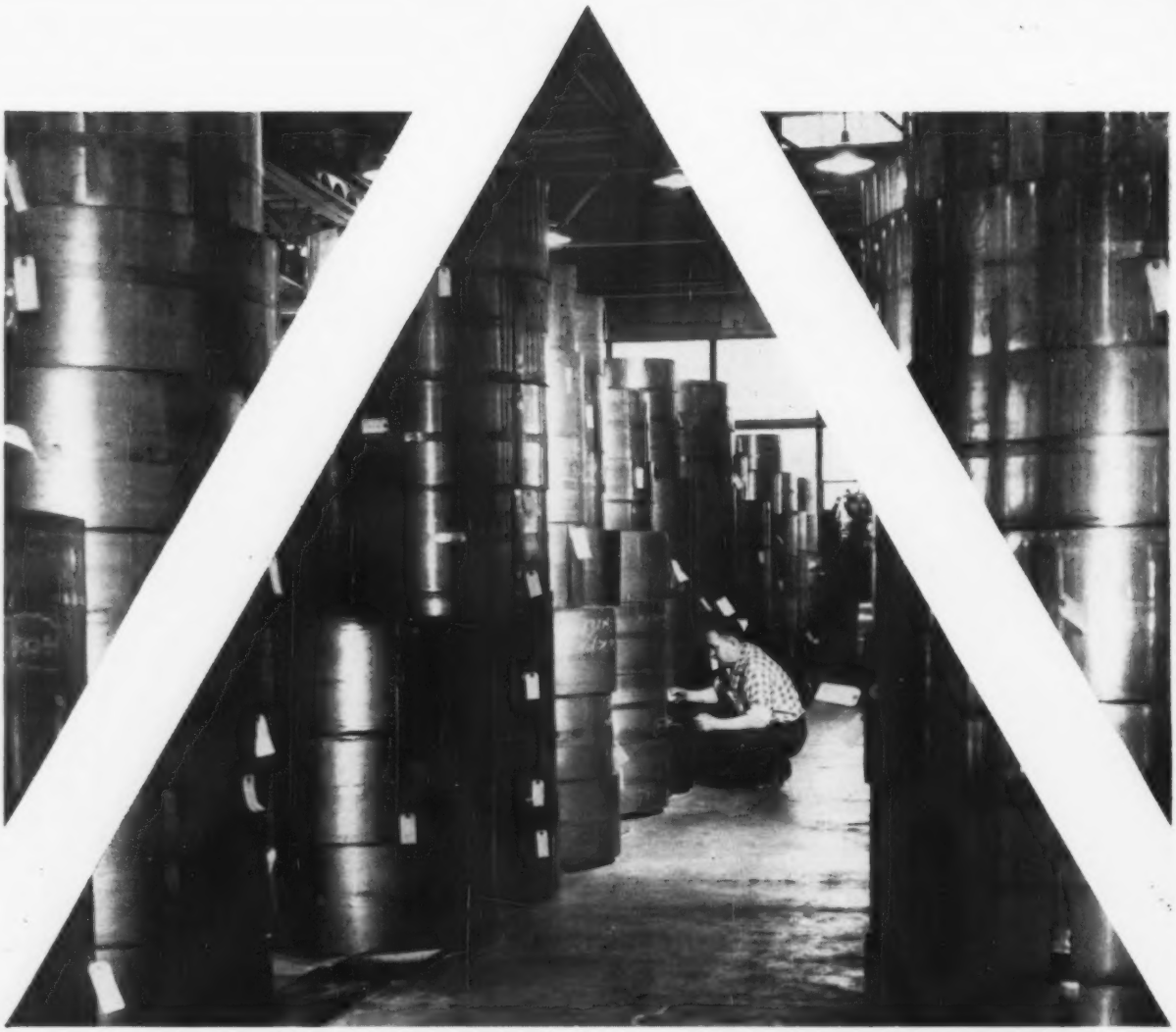
With lightweight, rigid-type Double XX wheels you "head" into the work at about a 30° angle . . . literally cutting metal away—a much faster method than grinding it down. Made from fast-cutting aluminum oxide abrasive, strongly bonded with synthetic resins and *doubly* reinforced for extra strength and safety. Use with mounting adaptor. No backing pad required. Available with 7" and 9" diameters, 3/16" and 1/4" thicknesses. Order from your Simonds distributor.

SIMONDS ABRASIVE COMPANY

Tacony & Fraley Sts., Philadelphia 37, Pa.

DIVISION OF SIMONDS SAW AND STEEL CO.

BRANCHES: CHICAGO • DETROIT • LOS ANGELES • PHILADELPHIA • PORTLAND • ORE. • SAN FRANCISCO • SHREVEPORT



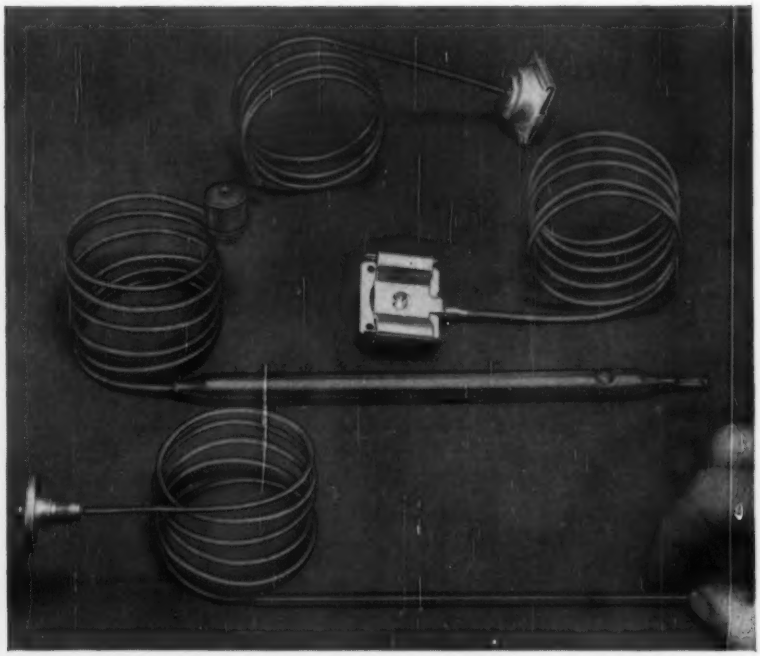
Right Down Your Spring-Steel Alley

The spring steel you need may be sitting in our mill—ready to ship from stock or to roll, slit, heat-treat and finish to your specifications—but fast. Strip steels in widths up to 6½″ tempered and 13″ annealed or hard-rolled. You specify temper, finish, color, edge, forming properties, tolerance, etc. Find out about these "steels of a lifetime." Write for our 4-page folder highlighting products made from Wallace Barnes Spring Steel. Try us on your next requirement.

Wallace Barnes Steel Division
Bristol, Connecticut

Associated Spring Corporation

10 TO 15 NEW JOBS a week, each a different application, require a continuous program of evaluating the properties of metals and fabricating costs at Robertshaw-Bridgeport.



In making bellows (left) and temperature sensors (above) to meet ever-changing needs of control, appliance, and industrial equipment manufacturers, Bridgeport Thermostat Div., Robertshaw-Fulton Controls Co., Milford, Conn., averages 10 to 15 new problems a week. Specifications vary widely in dimensions and physical characteristics. Dependable performance over long periods of uninterrupted service is vital—yet costs must be rigidly controlled.

So for quality with maximum economy in fabrication, materials must be matched precisely to the needs of each job. And in this, Robertshaw-Bridgeport looks to its suppliers for creative technical services. For many years, The American Brass Company specialists have been helping to select the correct alloys in phosphor bronze or brass and to meet fabrication problems in the making of bellows—to apply economically precision-made capillary tubing and other small-diameter copper tube in sensor assemblies. Through such services, The American Brass Company is constantly helping metal fabricators across the nation control quality while keeping costs down.

ARE you caught between cost reduction and quality control? Find out if you are buying metal properties you don't need. An Anaconda specialist may be able to suggest a lower cost alloy that fits the requirements of your job more closely. Or he may find that an adjustment of temper or a change in your fabrication methods can cut your costs. The services of Anaconda specialists are available through your American Brass representative. Call him in today, or write: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont. 6857

ANACONDA®

COPPER BRASS BRONZE NICKEL SILVER

MILL PRODUCTS

Made by The American Brass Company

puts that "want-to-buy" gleam in their eye

UNILOY
STAINLESS STEELS

The gleam in *her* eye reflects the brilliant beauty of stainless steel trim. The gleam in *his* eye reflects the protection that only stainless steel provides. Helps keep that "showroom look" for years.

Specify Uniloy stainless steel, produced by steelmakers who have been making specialty steels since 1884. This backlog of experience explains Uniloy's gleaming finish, why it is so easy to fabricate. For prompt delivery of Uniloy stainless steel rolled to your exact specifications, write or call our nearest sales office or warehouse.

UNIVERSAL CYCLOPS
STEEL CORPORATION
BRIDGEVILLE, PA.

STAINLESS STEELS • TOOL STEELS • HIGH TEMPERATURE METALS

Now you can use

NIALK® TRICHLOR FOR BOTH FLUSHING AND VAPOR DEGREASING

Use just one grade of trichlor to flush missile and rocket parts and for vapor degreasing

The *metal degreasing grade* of Nialk trichlorethylene meets government and industry specifications for flushing missile and rocket components.

Its residue is a low 0.0005%. It also meets standard impact sensitivity requirements.

Cut your inventory The time and money savings of this new development are obvious. In just one area —your inventory—you can make substantial savings.

Eliminate mistakes There's no chance of picking the wrong drum now that you need only one grade of trichlor for both flushing and vapor degreasing.

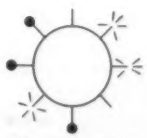
No disposal problems Take the Nialk trichlor you use for flushing and in most cases you can use it in your vapor degreasing operation without distilling.

Data sheet For more information on this standard grade of Nialk trichlor, write for data sheet No. 814.

Remember—*only Nialk trichlor has* **psp.**

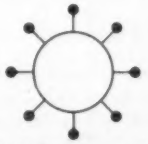
DOES YOUR SOLVENT SOUR?

1. Trichlor is protected by stabilizer against heat, air, light, moisture, acids, and active metals.



2. Ordinary stabilizers wear out during use, making it necessary to titrate and add fresh stabilizer.

3. A sour solvent can even stain metals instead of cleaning them; affects bath operation, too.



Nialk has **psp . . .** permanent staying power. Always gives you full protection. Never goes sour.

HOOKER CHEMICAL CORPORATION
302 UNION STREET, NIAGARA FALLS, N. Y.

Sales Offices: Chicago Detroit Los Angeles New York Niagara Falls Philadelphia Tacoma Worcester, Mass.
In Canada: Hooker Chemicals Limited, North Vancouver, B.C.

HOOKER CHEMICALS PLASTICS

Nickel makes steels even better

Properties that Nickel improves include toughness, resistance to impact (particularly at low temperature), corrosion resistance, heat treatability, fatigue resistance, many more.

Nickel provides versatile steels like the two widely warehoused types AISI 4340 and AISI 4615-20.

The four more recently developed steels described below show how Nickel helps produce specialized steels, too.

AISI 4340 Through-hardening
4340 stands alone among medium carbon steels in its ability to provide maximum strength, ductility, toughness and resistance to fatigue in parts of medium to heavy cross section.

AISI 4615-20 Carburizing
4615-20 is a carburizing steel that has consistently proved itself the ideal for a wide variety of carburized parts. It's easy to harden and has a minimum tendency toward distortion in heat treatment.

Ultra-High-Strength Steel — 300 — M
Originated for aircraft landing-gear, ultra-high-strength steel develops 300,000 psi tensile strength yet retains high toughness. Amazing savings in weight and bulk are possible.

9% Nickel Steel
- Carburized applications — Develops full hardness . . . case *and* core . . . with furnace cooling (no liquid quench). Minimum distortion.
- Low Temperature applications — Resists brittle fracture to –320°F. Improves strength of large rotating parts.
- Petroleum applications — In certain applications such as the handling of sweet crude this steel has exceptional corrosion resistance.

5% Nickel — 2% Aluminum Steel
Provides highest core strength obtainable in age-hardening and nitriding steels along with extreme surface hardness. Noteworthy resistance to wear particularly at high temperature.

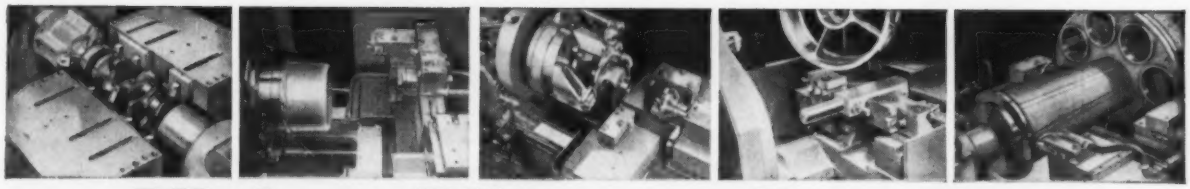
New Ni-Cr-Mo Carburizing Steels
New Nickel-containing carburizing steels offering an attractive combination of economy plus superior engineering and processing properties. These steels have proved of particular interest to the automotive industry where they are now being exhaustively tested.

For metallurgical or engineering details, for help in applying these steels, feel free to call on Inco's Development and Research Division.

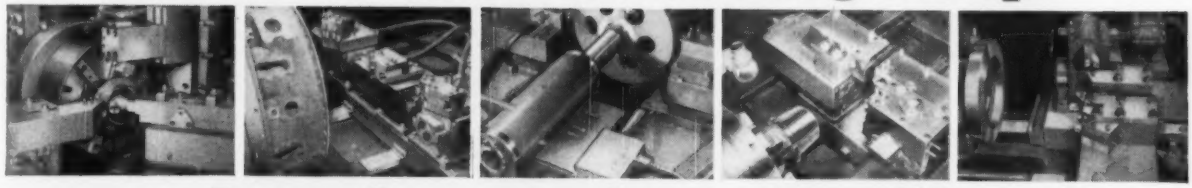
The INTERNATIONAL NICKEL COMPANY, Inc.
67 Wall Street New York 5, N.Y.

INCO NICKEL

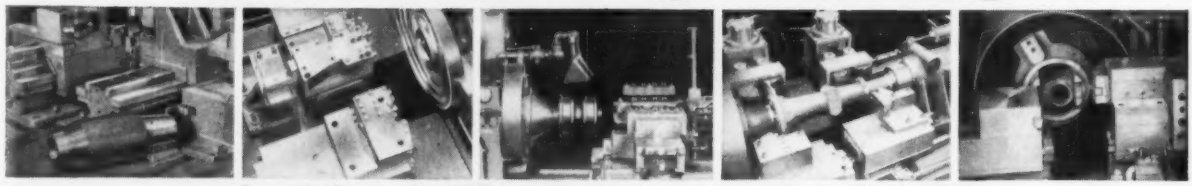
NICKEL MAKES ALLOYS PERFORM BETTER LONGER



All these different tooling setups



show the amazing versatility



# of this fully automatic lathe

...the SIMPLIMATIC

Here's versatility that beats any automatic lathe you ever saw! Actually, the Simplimatic is doing hundreds of jobs like these—jobs that would otherwise be put on *special* machines—built at extra-special cost. But this (and don't miss the important point!) is a *standard machine*—at a *standard price.*

If you have medium or long runs on parts up to 36¼" in diameter, get the facts about the Simplimatic Automatic Lathe.

GISHOLT MACHINE COMPANY

Madison 10, Wisconsin

THIS CATALOG may show you how the Simplimatic can save thousands of dollars for you as it is doing for many others. Write for your copy.

Gisholt Machine Co.
Madison 10, Wisconsin
Gentlemen:

Please send my copy of the Simplimatic Catalog.

Name.....*Title*.....

Company.....

Address.....

City.....*Zone*....*State*.....

ASK YOUR GISHOLT REPRESENTATIVE ABOUT GISHOLT FACTORY-REBUILT MACHINES WITH NEW MACHINE GUARANTEE

There's just One Rule at Bristol Brass...

To make every pound of strip, rod and wire the way we would want it, if we were buying it

Bristol-Fashion
means Brass at its best

THE BRISTOL BRASS CORPORATION • SINCE 1850, MAKERS OF BRASS STRIP, ROD AND WIRE IN BRISTOL, CONNECTICUT

Bristol Brass has offices and warehouses in Boston, Buffalo, Chicago, Cleveland, Dayton, Detroit, Milwaukee, New York, Philadelphia, Pittsburgh, Rochester, Syracuse.

USERS OF **NEW**
ROEBLING HERRINGBONE* WIRE ROPE
HOLD THESE TRUTHS TO BE SELF-EVIDENT...

That Herringbone is the most practical and *needed* wire rope development to come along in years.

Herringbone, the regular lay and Lang lay rope, is actually two-ropes-in-one rope. Thus, the qualities that make these two ropes *good* ropes, combine to make Herringbone *excellent.*

HERE'S WHY:

The steel core of Herringbone provides the *ideal* support for the two pairs of Lang lay and one pair of regular lay strands used in its construction. In addition, the outer wires are heavier for extra abrasion resistance, and good flexibility is maintained by the finer wires inside. This combination of features enables Herringbone to give *longer service* in most applications.

Herringbone has been used on a wide variety of excavating equipment and tough hoisting jobs with impressive results. Its applications are practically unlimited on installations which call for all-steel ropes and on many where fiber core ropes are now being used. Another of Herringbone's added attractions is the fact that it eliminates the necessity for stocking Lang lay rope for one job and regular lay for another.

Your Roebling Distributor has Herringbone right now. He has, also, copies of a brochure describing Herringbone, the newest Roebling Star Performer. If you wish, write Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, for literature and anything you'd like to know about Herringbone.

*Reg. App. For

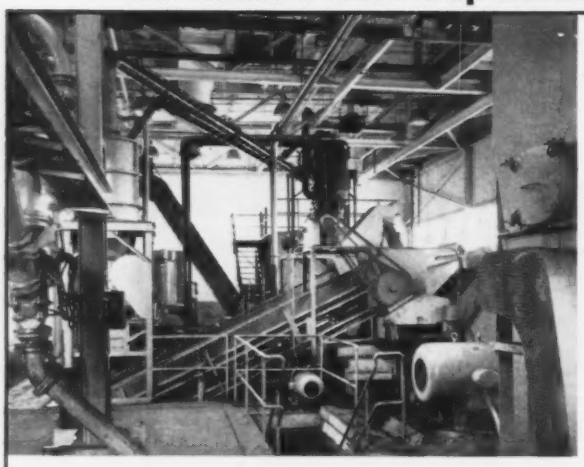
ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation

HERRINGBONE
WIRE ROPE

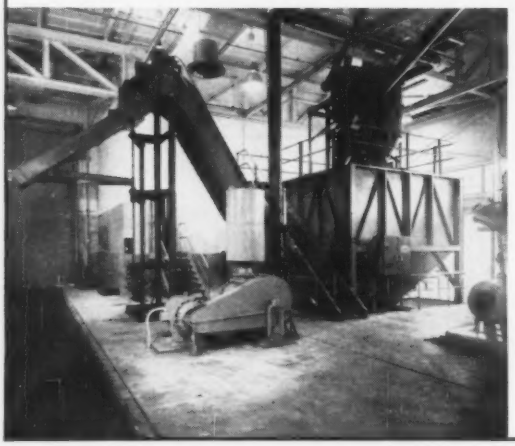
How to Make Chip Handling a Profitable Operation

with National Metal Chip Handling and Oil Reclamation Systems



▲ This view shows the efficient, National-equipped chip room in one of the nation's large automotive parts plants.

▲ Comprehensive chip handling system showing suspended-type continuous chip wringer in foreground.



◀ Storage bin for malleable iron chips received from vacuum-type pneumatic conveyor system. Bin discharges to railroad cars by means of National Combination Horizontal-Vertical Elevating Conveyor.

▶ Storage bin loading crushed dried steel chips into railroad gondola car. Pneumatic Chip-Veyor feed line shown in foreground.

A National system may give you your biggest single cut in costs! Here are quotes from our mail: "Saving $300 daily in scrap handling cost alone!" . . . "Saved $15,850 in 3 months on reclaimed oil!" . . . "$40,000 scrap disposal unit paid off in one year!"

These savings are reported by companies in various types of industry, such as Ford, General Motors, Fafnir Bearing Co., Standard Pressed Steel Co., Chicago Pneumatic Tool Co., Fairfield Mfg. Co., Otis Elevator, and General Smelting Co.

National makes equipment to handle all forms of metal chips and borings . . . steel, stainless steel, cast iron, aluminum, brass or copper. Special equipment has been designed to solve almost every problem in the handling of scrap metals and cutting oils from the large production plant to the job shop operation with a single or group of machine tools.

National Systems are also used for the removal of punch press scrap and the handling of small parts such as cartridge cases, bearing cages, etc.

Send for National's free Bulletin C-56 today . . . consult our catalog in Sweet's Machine Tool Catalog File . . . or contact our nearest representative.

National CONVEYORS COMPANY INC.
FAIRVIEW, BERGEN COUNTY, N. J.
WHitney 5-9136

Also manufacturers of **Ash Conveyor Systems** (Send for Bulletins P57-A and H57) and **Pneumatic Systems** for handling granular materials (Bulletin P-58G)

REPRESENTATIVES

ATLANTA 3, Ga. — P. H. Nichols & Co. — 400 Whitehead Bldg. • **BALTIMORE 18, Md.** — Lamb Engineering Co. — 2125 Maryland Ave. • **BOSTON 94, Mass.** — Mills Engineering Co., Inc. — 300 First Ave., Needham Hts. • **BUFFALO 2, N. Y.** — Charles P. Hague, Inc. — 625 Delaware Ave., Rm. 202 • **CHARLOTTE 7, N. C.** — E. L. Mountcastle — 2617 Selwyn Ave. • **CHICAGO 4, Ill.** — Burke & Colston (Ash) — 53 W. Jackson Blvd. • **CHICAGO 5, Ill.** — Mayer & Oswald (Chip) — 407 S. Dearborn St. • **CINCINNATI 27, Ohio** — Smith E. Hughes — 3716 Petoskey Ave. • **CLEVELAND (Lakewood 7), Ohio** — J. Harry Haywood — 12031 Edgewater Dr. • **DETROIT (Ferndale 20), Mich.** — Beltaire-Drissen — 570 Livernois Ave. • **HARTFORD, Conn.** — Dee Engineering Co. — Cromwell, Conn. • **HOUSTON 5, Texas** — Industrial Handling Engineers — 1200 Bissonnet • **KANSAS CITY 12, Mo.** — W. C. Carolan Inc. — 612 W. 47th St. • **LOS ANGELES 13, Calif.** — W. F. Huff and Co. — 417 S. Hill St. • **PHILADELPHIA, Pa.** — C. V. McQuary — P.O. Box 52, Cheltenham, Pa. • **PITTSBURGH 29, Pa.** — Gibson & Stanier Engineered Products — P.O. Box 9742 • **ST. LOUIS 22, Mo.** — Medor, Inc. — 10408 Manchester Ave.

16 Ton "Gas Mask" for a Blast Furnace

Diversity in the production of steel castings is routine in the foundries of Erie Forge & Steel Corporation. For example, this cast steel blast furnace bell.

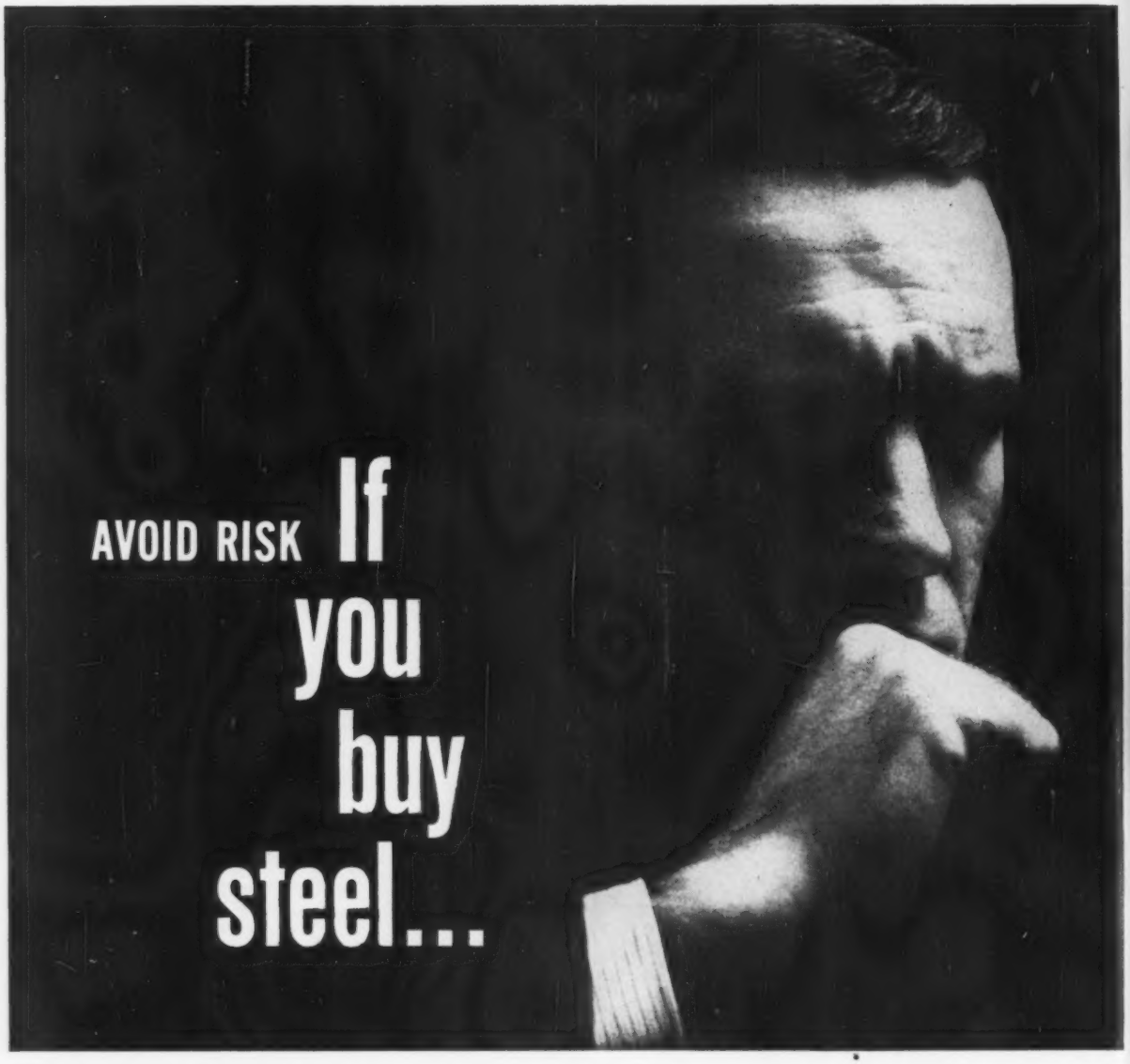
The 16 ton lower bell casting teams up with the one ton cast steel upper bell to distribute solids to the blast furnace without loss of gasses . . . a job which requires high quality steel of accurate as-cast dimensions.

From the beginning of the steelmaking process the raw materials are tested at frequent intervals to assure the quality of the steel . . . careful metallurgical and engineering control from scrap pile to finished casting. This is standard operating procedure at Erie Forge & Steel in the manufacture of steel castings and forgings which meet the widely diverse demands of industry . . . another of the many reasons your Casting and Forging requirements are in competent hands here. Consult with us.

ERIE FORGE & STEEL CORPORATION

ERIE, PENNSYLVANIA

MEMBER AMERICAN IRON AND STEEL INSTITUTE



USE OUR CAPITAL to cut your inventory costs

You save money when you use the steel inventory of your Steel Service Center. Cutting down your steel stocks frees your capital for more profitable use . . . ties up less working capital. That's good business.

You can save space, and the cost of that space by using our inventories as your own. You seldom suffer obsolescence losses. You avoid inventory problems created by too-ambitious forecasts.

We deliver your steel when you want it, cut to exact size, and ready for your use. Whatever your steel need, there's a nearby Steel Service Center set up to serve you quickly from stock.

If you're putting steel in inventory because you think it's a bargain, compare *all* of your *costs of possession* with the cost and *freedom-from-risk* of buying steel from your Steel Service Center.

Or, to be more precise, get the booklet *What's Your Real Cost of Possession for Steel* from your convenient Steel Service Center. American Steel Warehouse Association, Inc., 540 Terminal Tower, Cleveland 13, Ohio.

COST OF POSSESSION FOR STEEL IN YOUR INVENTORY

Per ton delivered	
Cost of capital:	
Inventory	
Space	
Equipment	
Cost of operation:	
Space	
Materials handling	
Cutting & burning	
Scrap & wastage	
Obsolescence	
Insurance	
Taxes	
TOTAL	

COST OF FREEDOM-FROM-RISK STEEL FROM YOUR STEEL SERVICE CENTER

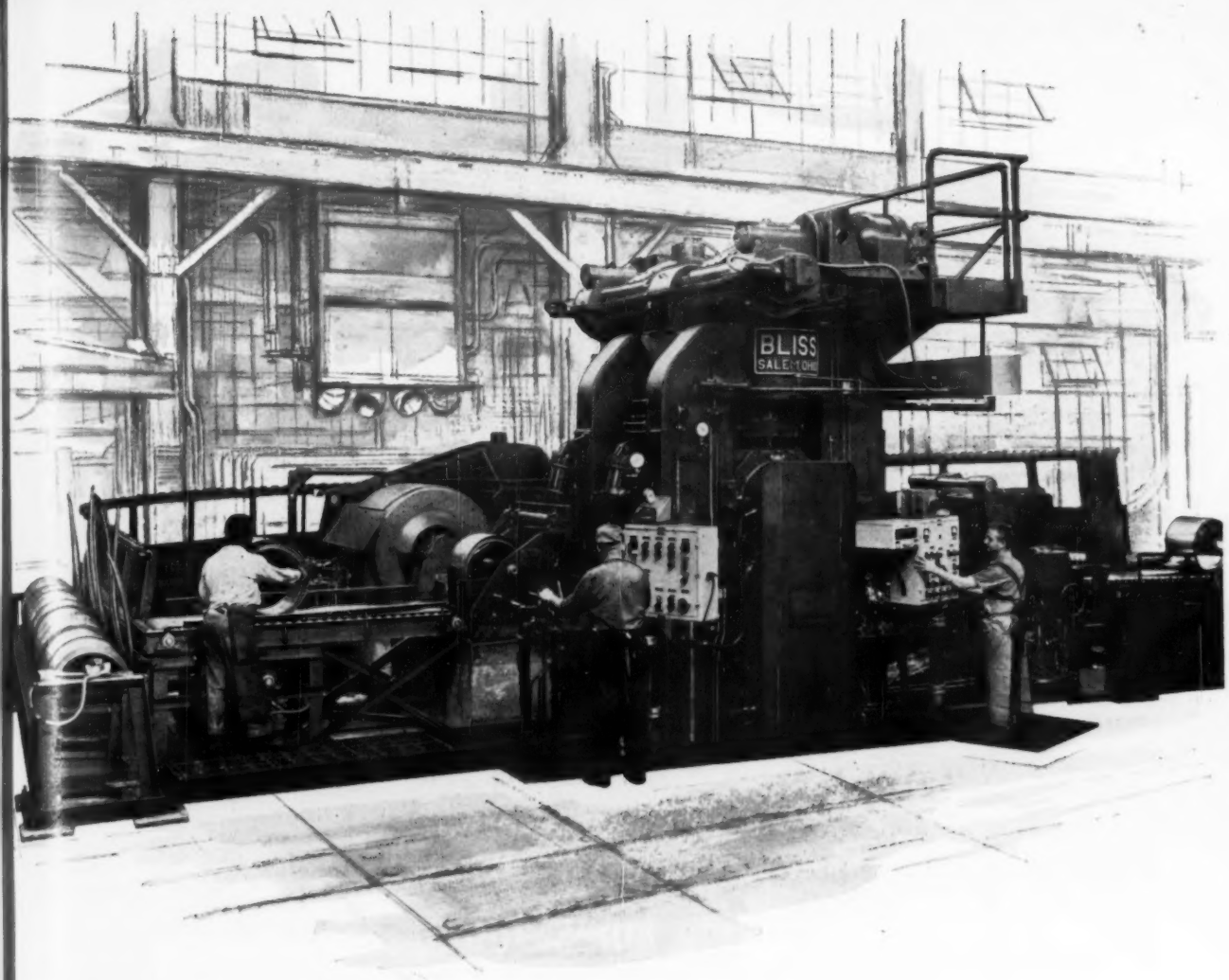
Per ton, cut-to-size, and delivered

TOTAL

AMERICAN STEEL WAREHOUSE ASS'N

The American Steel Warehouse

...YOUR STEEL SERVICE CENTER



HOW TO ROLL MORE FOR LESS:

replace three-and-a-half old-timers with one really modern mill

The recently-completed modernization program at H. K. Porter Company's Riverside-Alloy Metal Division has doubled the plant's capacity of specialty nonferrous alloys with essentially the same work force.

A central unit in the modernization is the Bliss 4-high intermediate mill shown here. According to Riverside, this single new mill provides greater production than the three old mills it replaces—a fourth old mill is still used to some extent, hence the three-and-a-half figure. Equipped with a run-around roller conveyor, the new mill coils metal on the first pass from ½-inch bars; returns the coils automatically to the entry side for further passes. Former practice was to roll flat for four or five passes before coiling.

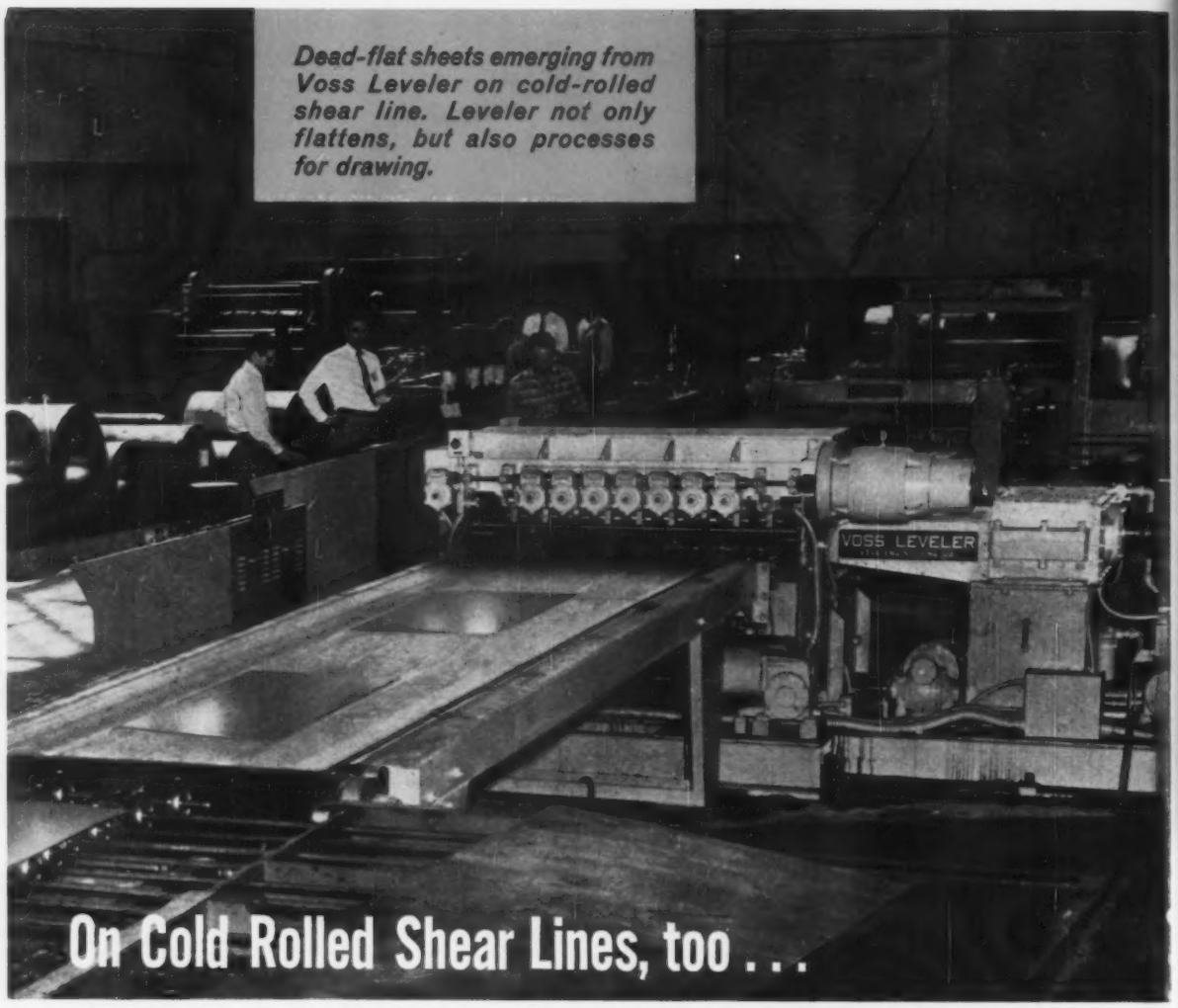
Riverside reports that the new equipment will pay for itself in the short space of a few years. It's an outstanding example of the way a well-planned improvement program... plus Bliss rolling mill equipment... can bring new economy and efficiency to metal rolling. For other examples, write us today for a complimentary copy of our new 84-page Rolling Mill Brochure.

BLISS
SINCE 1857

Bliss is more than a name... it's a guarantee

E.W. BLISS COMPANY, Rolling Mill Division, Salem, Ohio

Subsidiary: The Matteson Equipment Company, Inc., Poland, Ohio



Dead-flat sheets emerging from Voss Leveler on cold-rolled shear line. Leveler not only flattens, but also processes for drawing.

On Cold Rolled Shear Lines, too . . .

VOSS LEVELERS EQUAL OR EXCEED STRETCHER-LEVEL FLATNESS

Voss Inverted Roller Levelers are giving the same high performance on cold-rolled steel as they do on galvanized and hot-rolled products. One large producer reports that sheets from 85% of a light-gauge cold-rolled coil are leveled to stretcher-level flatness. Furthermore, this same operator has reduced re-rolling by 25%.

Another example: A maker of wall panels eliminates time-consuming inspection and sorting of individual sheets for flatness. By leveling them with a Voss, he automatically assures panel flat sheets without further checking.

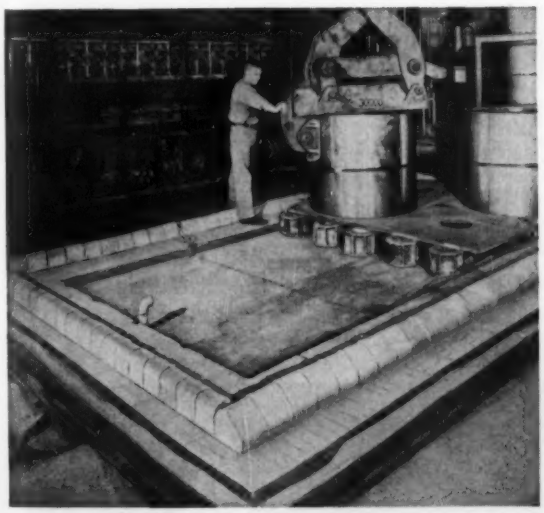
User after user tells of increased quality and lowered costs resulting from Voss Roller Levelers. Voss-patented exclusive design features assure extreme flexibility of application and precise area control on any section of a sheet or coil. Whatever your application—galvanized, hot or cold-rolled, strip, coils, sheets or plate, ferrous or non-ferrous—Voss has a quality-making, profit-making story for you. Write today for detailed information and a list of users.

Voss ENGINEERING CO.

7301 Penn Ave., Pittsburgh 8, Pa. Churchill 2-4422

Four-stack strip annealing furnace with a capacity of three 30,000 lb coils on a 34 to 36 hr firing cycle, 68 to 78 hr cooling, operating at a strip temperature of 1320 F in a 8.2% CO atmosphere. The base, 9″ thick hearth and portions of the curb are cast of B&W Kaocrete-A.

B&W Kaocrete-A resists CO disintegration and sand penetration at Granite City Steel



B&W Kaocrete-A is cast in the hearths and curbs of these furnaces where firebrick refractory was previously used.

Granite City Steel states that both bases have been in use for over three years without any disintegration resulting from the CO atmosphere. In addition, the monolithic structure of this B&W castable refractory eliminates the destructive effects produced by sand penetrating the joints and cracks of firebrick hearths.

For further information on B&W's specialized refractory castables, write for Bulletin R-35.

Strip annealing furnace with a capacity of 70 to 80 tons per charge on a 24 to 48 hr firing cycle, 48 to 96 hr cooling cycle, operating at a strip temperature of 1320 F in a 8.2% CO atmosphere. 4½″ lining of B&W Kaocrete-A is used on hearth and curbs.

B&W REFRACTORIES PRODUCTS: B&W Alimul Firebrick
B&W 80 Firebrick • B&W Junior Firebrick • B&W Insulating Firebrick
B&W Refractory Castables, Plastics and Mortars
B&W Silicon Carbide • B&W Ramming Mixes • B&W Kaowool

BABCOCK & WILCOX
THE BABCOCK & WILCOX CO.
REFRACTORIES DIVISION
GENERAL OFFICES: 161 EAST 42nd ST., NEW YORK 17, N.Y.
WORKS: AUGUSTA, GA.

R-595

Project Alert Working at UDYLITE *Produces for You...*

SILICON EFFICIENCY, RUGGEDNESS AND LONG LIFE

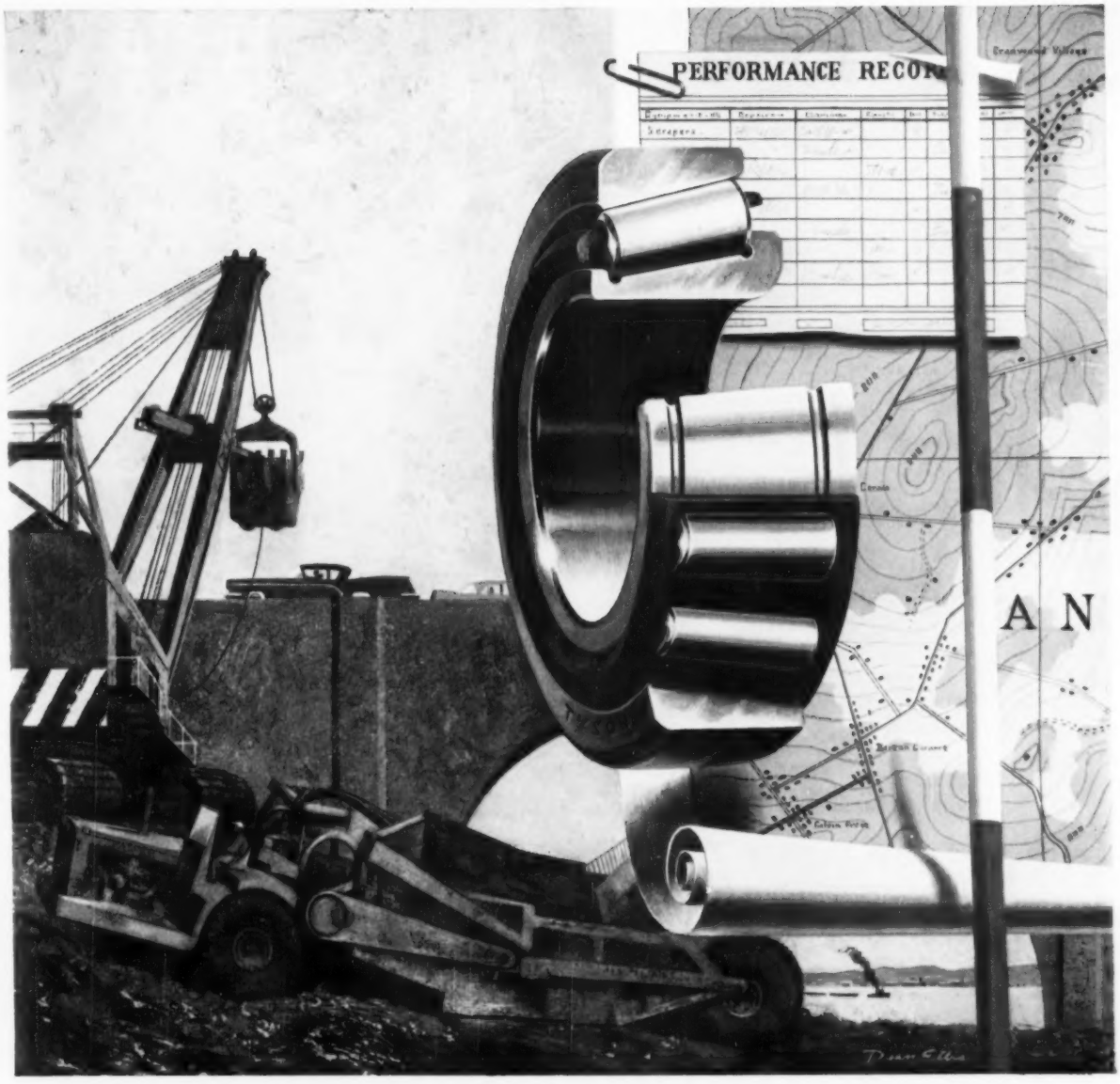
for old rectifiers

1. **A SPECIAL PRODUCT . . .** For the first time, a Udylite-engineered, Udylite-built *silicon* replacement stack is offered for you to use in revitalizing your Udylite magnesium-copper-sulphide or selenium rectifier and upgrading its performance to the level of today's best. *And you can do this in your own shop,* without delay, at a minimum of expense and down time.
2. **A SPECIAL SERVICE . . .** As an alternate plan, your old rectifier can be returned to Udylite for *factory* installation of the silicon replacement stacks by trained rectifier specialists. At the same time, your rectifier will be completely overhauled and tested so that it will be returned to you renewed and ready for the longer life and high efficiency of Udylite silicon.
3. **A SPECIAL VALUE . . .** This whole program is set up as a Project Alert. A special department will handle your order and your equipment from start to a completely satisfactory finish. A *guaranteed delivery* will keep your down time to a minimum. With prices based on a production line plan, you will get more value per dollar spent than you ever before thought possible.

Let Udylite help you get your entire plating operation in top working order and ready to go at peak capacity. Your Udylite sales engineer will be calling on you soon. But if you need priority service, write, phone or wire directly to:

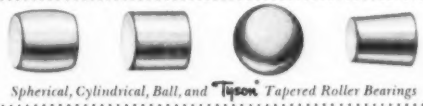
the udylite corporation

PROJECT ALERT



Parts determine performance

Few parts make as big a difference in product performance as the bearing. For the right bearing in the right place helps improve over-all performance — prevents breakdowns and high maintenance costs. Where can you get impartial assistance in choosing the right bearing? Call SKF. No other producer offers as much experience in improving product performance with bearings as SKF, makers of the most complete line of ball and roller bearings. 5909



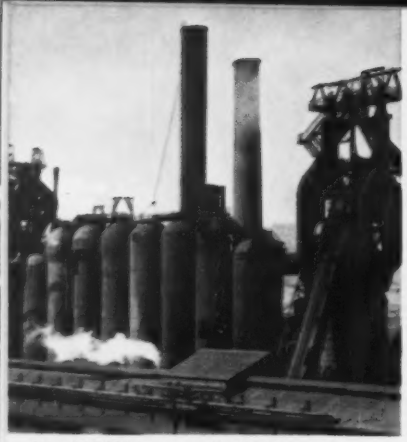
Spherical, Cylindrical, Ball, and Tyson® *Tapered Roller Bearings*

EVERY TYPE—EVERY USE

SKF®

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

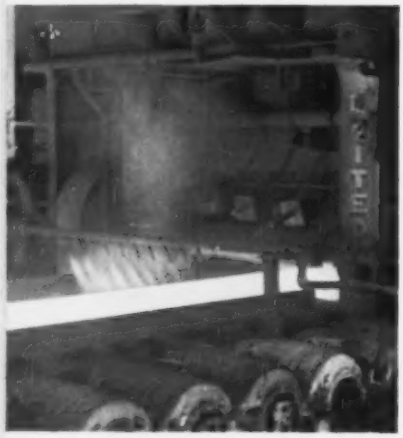
® REG. U. S. PAT. OFF.



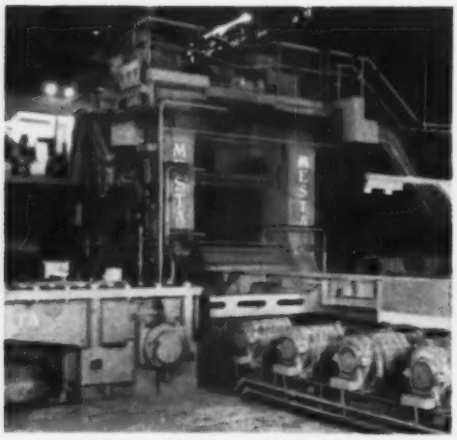
New 400,000-ton capacity blast furnace

New $11 million basic oxygen furnace facility

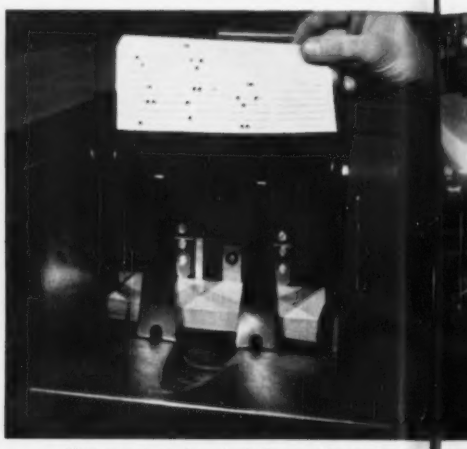
New $74 million, 11-furnace open hearth shop



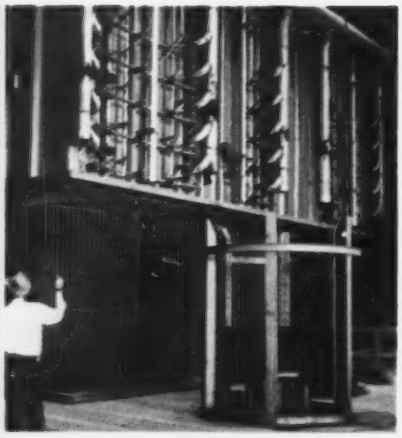
New horizontal scale breaker



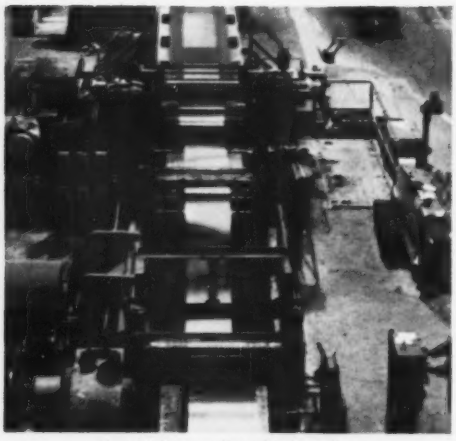
New $12 million reversing roughing mill



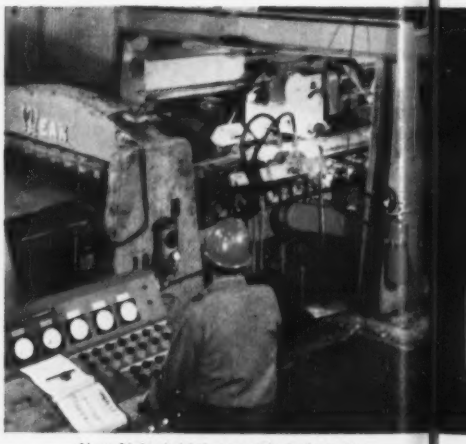
New punch-card controls for quality control



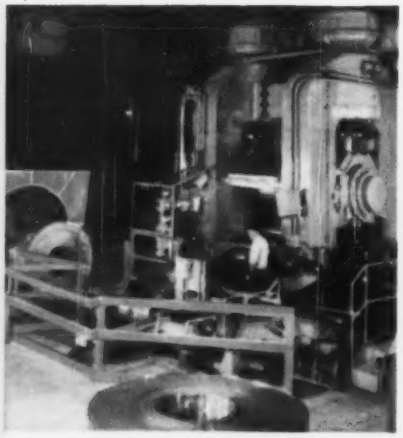
Twenty-five new annealing furnaces



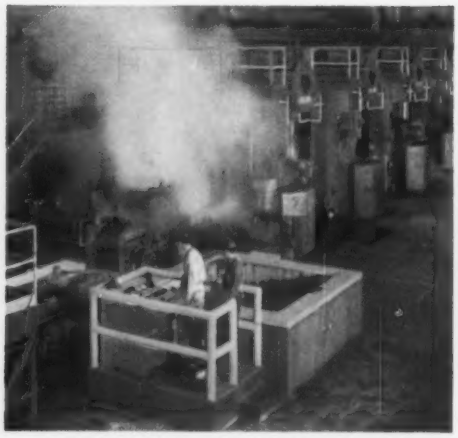
New high-capacity cold shear line



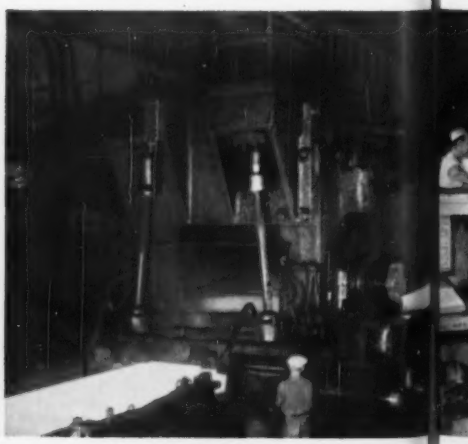
New ⅜-inch high-speed hot shear line



New 56-inch precision temper mill

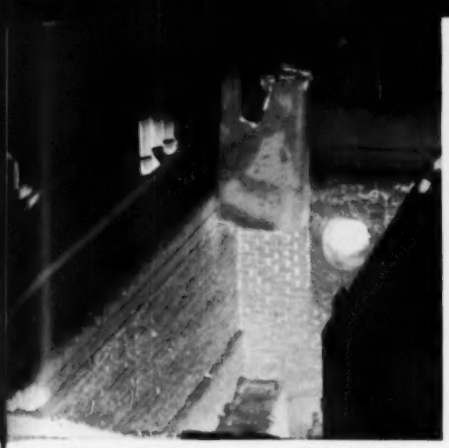


New $36 million, 44-inch hot strip mill

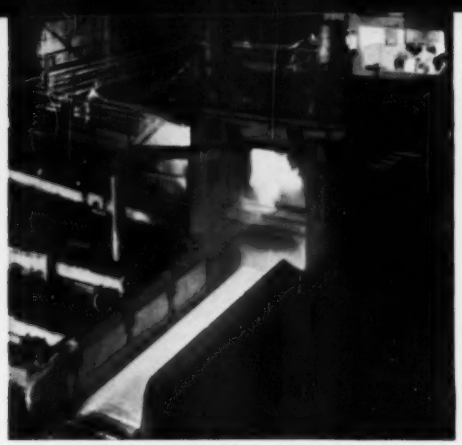


Improved 96-inch hot strip mill

rth shop



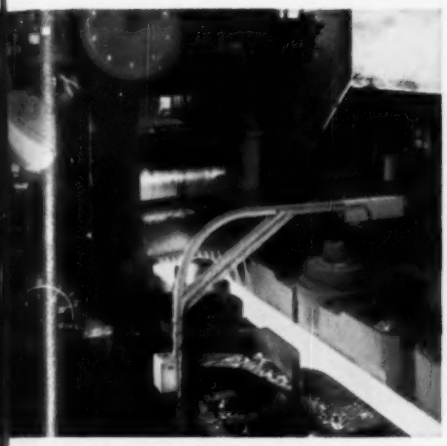
New ingot re-heating furnaces in all steel plants



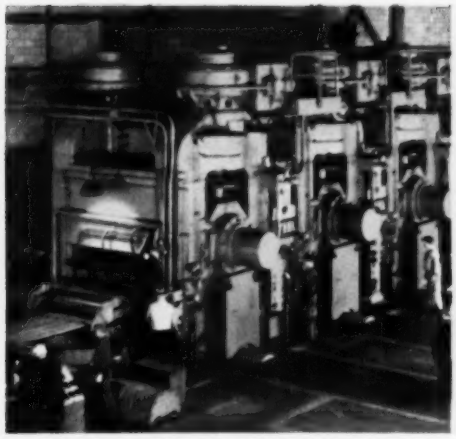
New $17 million, 68-inch blooming mill

New automatic oxygen scarfer

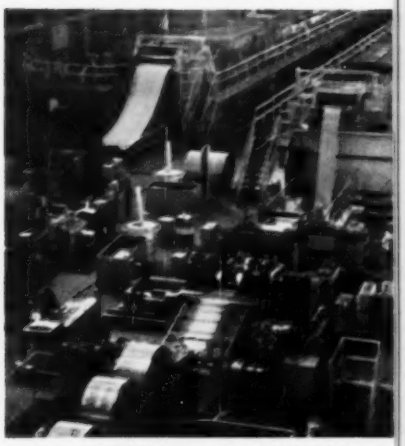
control



Vertical edgers to assure accurate coil width

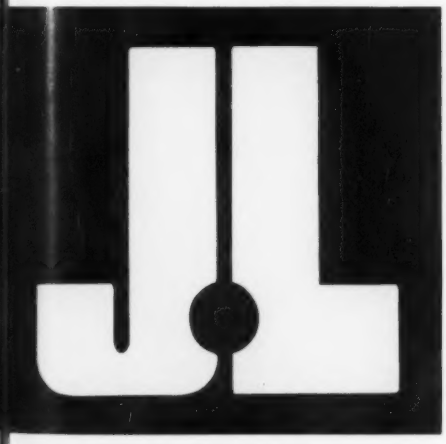


World's fastest cold reducing mill of its kind



New pickling line handles 60,000-lb. coils

line

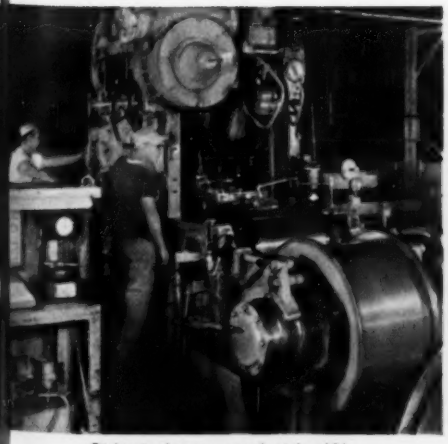


There is a new J&L, which has invested nearly 800 million dollars in new and improved facilities . . . more than twice the company's total value at the end of World War II. This gives us greatly-expanded production capacity, and enables us to be a steady, dependable source of supply for carbon and stainless sheet and strip, and many other products, to present customers and customers we never served before.

Jones & Laughlin Steel Corporation

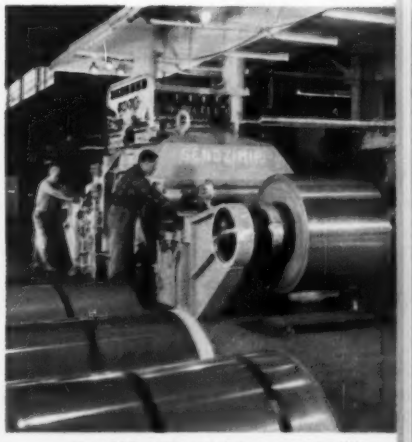
PITTSBURGH, PENNSYLVANIA

ll



Strip steel, a new product for J&L

New $6¼ million Sendzimir galvanizing line



New $62 million stainless steel facilities

at Johnson's Machine Company

. . . with the help of the Ætna Life's Business Planning Department

When Fred Johnson died last year his thriving machine shop didn't have to go out of business . . . experienced no down time . . . because Mr. Johnson was a progressive and foresighted man.

With the help of his Ætna Life representative, attorney and accountant, he set up a plan which gave his wife in cash the full going concern value of the business. This same plan provided for a smooth transition of the ownership to two of his key employees – avoided financial chaos in the business and disaster to his own family.

If you own or operate any kind of business, it will pay you to investigate the vital need for a business continuation plan – and no one is better equipped to serve your interests than the Business Planning Department of your local Ætna Life General Agency.

ÆTNA LIFE
INSURANCE COMPANY

Affiliates: Ætna Casualty & Surety Co. • Standard Fire Insurance Co. • Hartford, Conn.

STEEL MILL INTEREST in controls and instrumentation is growing. The reason: Customers are demanding better surface and quality control of steel products. Additional controls and instrumentation will be needed to meet these requirements.

LOOK FOR MORE METALS USE in construction, particularly housing. Metal producers have stepped up development and promotion programs aimed at architects, builders, and buyers. Recent price adjustments for some fabricated housing materials portend new competition in this field.

MORE CONSTRUCTION DOLLARS are going into apartments. F. W. Dodge Co. reports that apartments last year accounted for 17 pct of total dwelling units, highest since 1951. It was 14 pct in '57 and 10 pct in '56.

OVERSEAS DEMAND for specialized mining equipment is flourishing. Export is usually 10 to 20 pct of the market and likely to hold. Construction equipment enjoys a steady market abroad. Paving machinery is needed.

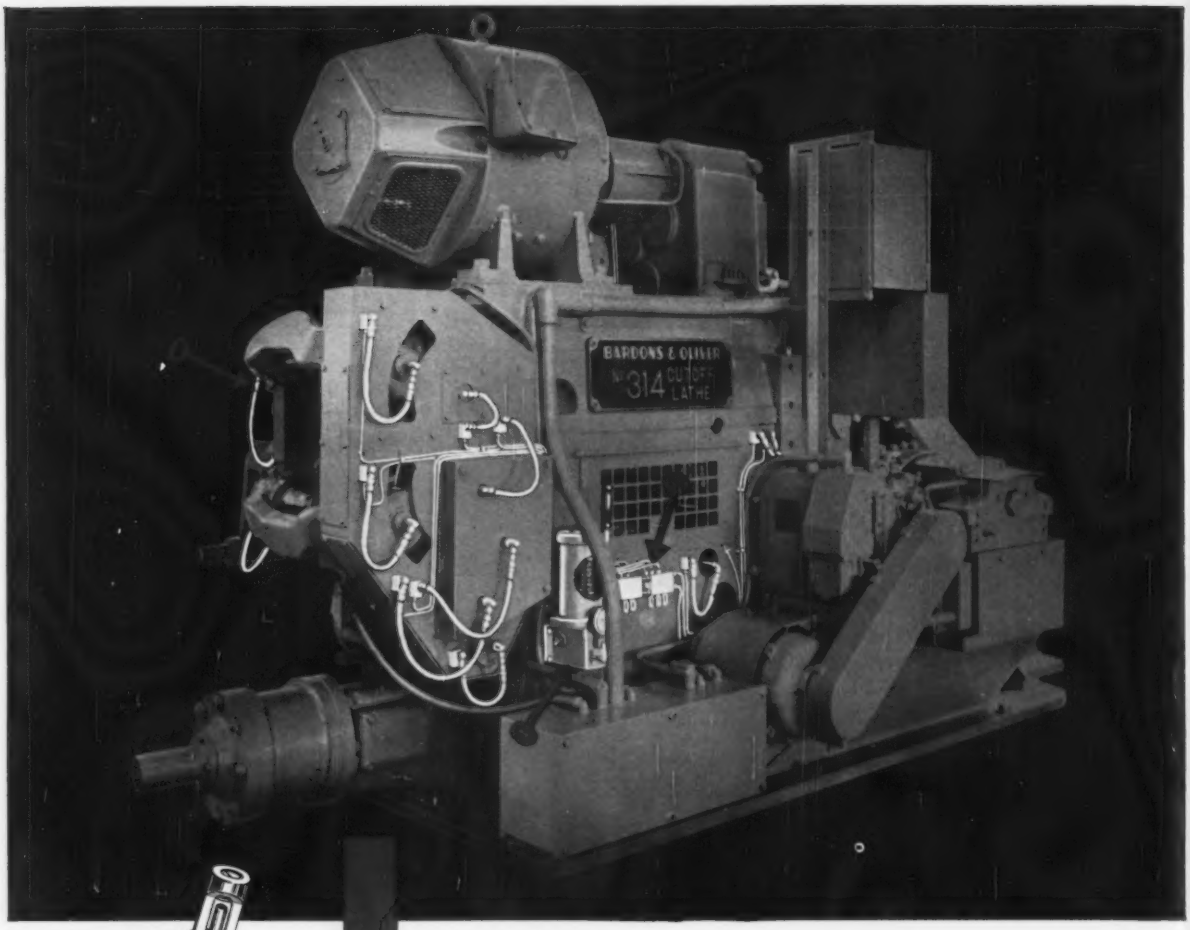
EXPORTS OF ELECTRONICS PRODUCTS have risen from $292 million in 1953 to $380 million in 1958. Equipment and components showed a $50 million increase during the year.

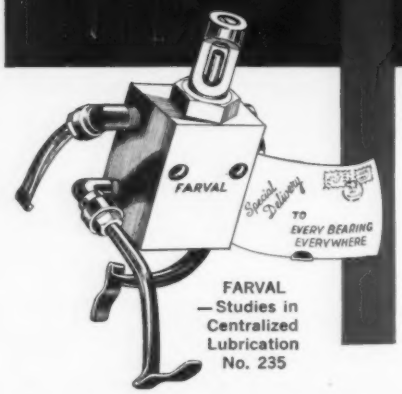
STEEL USERS are finding it hard to build inventories. Some of them are chewing it up as fast as it comes in. They're afraid they'll wind up in June, when steel contracts run out, without much of a stock to weather a possible strike.

BREAKTHROUGH FOR HEAT PUMPS? That's the opinion of Borg-Warner Corp.'s York Div., on the basis of a major industrial installation. York's air-source heat pump will both heat and cool the 220,000 sq ft Flick-Reedy Corp. plant in Chicago. It's said to be cheaper to operate than conventional oil-heating equipment.

BIG LABRADOR ORE CONCENTRATION PROJECT is in the works. It's planned by Iron Ore Co., of Canada, jointly owned by seven American steel companies and three Canadian outfits. Plans are firmed up and ready to go on the $175 million project, according to industry sources.

HIGHWAY CONSTRUCTION COSTS may be settling down. Average bid prices for Federal-aid highway construction in fourth quarter of '58 were up 1.7 pct from the previous quarter. But this index of 141.6 was less than the 143.4 of the same quarter in 1957, reports the American Road Builders Assn.





FARVAL
— Studies in Centralized Lubrication
No. 235

Farval lubrication keeps productivity high on cutting-off lathes

Cropping and chamfering steel tubing and pipe—as well as cutting-off and chamfering couplings ranging in diameter from 5 to 14½ inches—requires a heavy, rugged cut-off lathe like this Bardons & Oliver No. 314. It must be dependable in service—give high productivity—provide long trouble-free service life.

Bardons & Oliver design engineers chose a manually-operated Farval Dualine Centralized Lubrication System to serve the lathe's 39 vital bearings. During the last 7 years Farval has lubricated many of these B&O's—and there hasn't been a single known bearing failure to date!

Remember, a modern Farval system can adequately lubricate hundreds of bearings from one centrally-located pumping station. Why not check with your local Farval representative and see how these versatile lubrication systems can help produce superior, more productive industrial equipment. Or ask for your free copy of Bulletin 26-S—it contains the complete "Farval Story". The Farval Corporation, 3282 East 80th Street, Cleveland 4, Ohio.

Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.

KEYS TO ADEQUATE LUBRICATION—wherever you see the sign of Farval—familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated.

SPECIAL REPORT

Steel Labor and Management Court the Public

With a lot riding on the outcome, industry and labor vie for public support.

What it amounts to is an early start of steel contract negotiations.—By J. B. Delaney.

▪ Steel labor contract negotiations have already started—more than four months before existing pacts run out on June 30.

To be sure, what steel management and steel labor are now doing isn't "negotiations" in the strict sense. But it amounts to that.

The Heat's On—What's going on is one of the most powerful and sustained propaganda campaigns since the United Steelworkers of America won their first contract in 1937.

The objective: To win over the American public to one point of view or the other.

"Bear By The Tail"—Comments one seasoned observer: "We've got a bear by the tail and can't let go. Now that this thing has started, both sides are in it until a new contract is signed—strike or no strike. The public will be hearing more from steel management and steel labor than ever before."

Virtually all known media of communications are being used—newspapers, magazines, radio, movies, television, company and union publications, news releases, and speechmaking. The lobbyists have stepped up their buttonholing in Congress and the state legislatures.

It's Expensive—It's almost on a par with a major political campaign, and pretty expensive. It would be hard to come up with a cost figure, but just consider this:

Steel Labor's Program:

The union last month launched a weekly series of half-page ads in some 40 major newspapers from coast-to-coast.

Radio and TV Appeals—Union

Battle of Market Baskets
Steel Industry Versus Steel Labor

1959's Union-Management Crisis

This year's steel labor contract negotiations will be critical for all industry and the economy in general.

A steel strike—and there is a good possibility of one—could spell the difference between a good business year and a poor one.

This, the second of a series on the 1959 labor outlook, discusses preliminary maneuvers of steel labor and management.

The IRON AGE's next article in this series will appear in the March 5 issue.

locals and districts have been sponsoring a 15-minute weekly radio program featuring Phil Regan, "The Singing Cop" of stage, screen, and radio. These programs are recorded in Hollywood and distributed nationwide. Each platter includes a union "message" to the public. This is a 26-week series.

The union has for some time been sponsoring a "TV Meeting of the Month" program over 40 strategically - located stations throughout the country. This month's program stressed the union's pre-negotiation theme: "Only people have purchasing power . . . only people can buy and use the goods turned out by American industry."

Speeches Galore — And, of course, "Steel Labor," the union's national newspaper, and hundreds of local union publications are making the party-line pitch to the union rank-and-file.

All this is buttressed by a first-class corps of speechmakers who carry the word to the union faithful in scores of local and district meetings over the country.

It's well-planned, impressive—and professional.

What Steel Management Is Doing:

Big Ad Campaign—The industry's newspaper ads are not as big as the union's—so far—but they are running in more newspapers—a reported 400. The ads are sponsored by American Iron and Steel Institute, which represents steel companies with 95 pct of the industry's ingot capacity.

Company publications are featuring articles giving the industry view on issues that will come up when formal contract talks get underway. Some are reprinting the Institute ads.

Hard-Hitting Speeches—Industry speechmakers are moving out in force. Two recent ones were particularly hard-hitting and plain-spoken on what the steel union's continuing demands for "more of everything" have been doing to the industry, the country—and steel labor job prospects.

What are both sides "selling" to the American public?

The industry program has five major themes:

(1) Inflation — "Inflation Robs Us All." Wage and benefit boosts that exceed productivity gains force price increases that feed the fires of inflation. The steel workers have been getting more than their share, while others (the unorganized, pensioners, etc) are suffering due to higher prices.

(2) Status of the steel worker. He's already one of the highest paid workers in American industry. His wages and "fringes" have outpaced rises in the cost of living. He's one of the "haves," one of the aristocrats of the labor force.

(3) Industry profits. They are not, as union leaders contend, "fabulous." On the contrary, iron and steel industry earnings are pretty far down the list in terms of return on investment. At 13.2 pct, it was 17th in 1957, according to the First National City Bank of New York.

(4) Productivity and output per man-hour. Steel labor costs rose 8

Steel Management Fights Back

Sharp Issue — Two top steel executives have taken sharp issue with the "pre-negotiation huffing and puffing" of the United Steelworkers of America in its bid to gain public support of probable demands in next summer's steel contract negotiations.

In a speech before the Rotary Club of Los Angeles, Joseph L. Block, chairman of Inland Steel Co., made these points:

"Hold The Line" — "The steel industry must do its part to help prevent further inflation. That is my first reason why excessive labor demands should be resisted."

We are already pricing ourselves out of our own market and out of foreign markets. Wage advances which force price advances will aggravate the situation.

A Threat To Freedom — Steel must not allow itself to be weakened because this would play into the hands of Soviet Russia in the economic struggle with that country. Low steel earnings would hamper modernization and expansion, hurt this country's chances in the economic battle.

Excessive wage demands are a threat to our own freedom. If inflation brings on restrictive economic controls, "all of our prized and cherished liberties will be imperiled."

Foreign Competition—R. Conrad Cooper, executive vice president of U. S. Steel Corp., and chief negotiator for steel firms, had this to say in a talk before the Foreman's Club of Dayton, Ohio:

Wage costs are the big reason why foreign mills are able to undersell us in our own back yard. "German steel workers earn about one-third as much as American steel workers."

"The union's pre - negotiation huffing and puffing is hardly in keeping with the seriousness of the situation as it relates to the hundreds of thousands of conscientious working men and women whose economic fate rests in the hands of the leaders of this union, and as it relates to the public at large."

pct per year between 1947 and 1957. During the same period, Dept. of Labor figures show a steel productivity gain of only 2½ pct per year. Steel employment costs have outstripped productivity 130 pct to 27 pct.

(5) Competition from foreign steel and other materials. High U. S. labor costs are hurting U. S. mills in competition with foreign producers—and costing hundreds of steel workers their jobs. Foreign mills are underselling American mills in the U. S. market. This situation will worsen unless steel wages are brought under control.

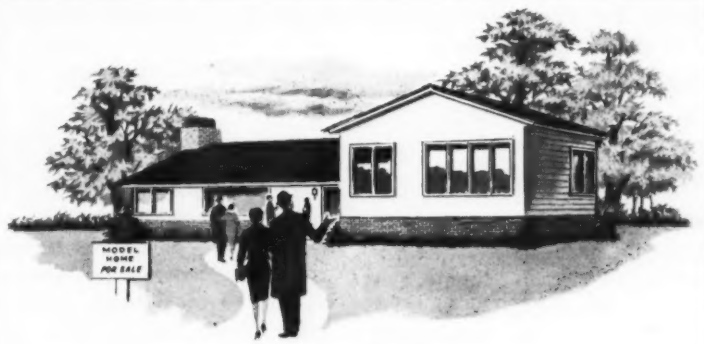
The union's program is keyed to the theme: "The More You Earn the More You Buy." It contends that prosperous steel workers contribute to a prosperous America. It's appealing to the self-interest of specific industries and working groups. It hopes to get across the idea that if steel labor doesn't get more money everybody will suffer.

In special "messages" to "The American People," David J. McDonald, the union's president, asserts: "America's greatest hope is the prosperous steel worker, the prosperous f a r m e r , salesman, teacher, businessman. What helps one, helps all."

Steel Fights Back—The union's theme has generated some caustic comment from steel industry leaders who contend the appeal is "fallacious" and downright dangerous.

R. Conrad Cooper, executive vice president of U. S. Steel Corp., and the man who will bear the brunt of the negotiating job with the union, refers to what he calls the union's "prenegotiating huffing and puffing." Joseph L. Block, chairman of Inland Steel Co., points out that the steel union appears to be intent on obtaining "sizable" raises in wage rates and extra benefits. He says: "There is no valid argument for a substantial increase in employment costs in the steel industry in 1959." (See box)

What's Wrong With This Ad?



How many new houses can you build for an extra billion dollars?

▪ This intriguing question is the headline of an advertisement which appeared in many of the nation's newspapers last week over the signature of the United Steelworkers of America. Since it is not answered in the ad, let's proceed to do so.

First, you have to know when the houses are to be built. If the time is right now then the answer is "You can build one hundred thousand $10,000 houses for one billion dollars."

But what is a $10,000 house —aside from the fact that you don't get much for $10,000 these days?

Going Up?—Well, to duplicate the $10,000 house of 20 years ago you would have to lay out $27,000 today. The house that cost $10,000 in 1949 would set you back $14,000.

But the Steelworkers ad speaks of "new homes of tomorrow." What they will cost is something few economists will agree upon. But this much they'll swear to: If the current inflationary trend continues, a 50 pct increase in housing costs in ten years would not surprise anyone. And it could be a lot higher!

Cockeyed Thinking—The ad also says "The more you earn . . . the more you buy"—which is probably the most fallacious bit of reasoning to emerge from USWA headquarters in years.

Tell that to the 50,000 Frenchmen whose retirement dreams have been obliterated by the past few years of inflation there! Tell it to the Germans who remember '23 — when it took a satchel to carry the price of a good dinner!

And tell it to thousands of fellow Americans who've seen their bonds and their pensions buy less and less each year.

The Race Is On — If labor continues to demand—and management to grant wage increases that outrace productivity then we can be certain that tomorrow's houses—and everything else in all our tomorrows — will carry higher price tags.

You don't buy more . . . if inflation has pushed up the price. It only seems that way.—**GFS**

Accord Reached on Canadian Javelin Ore

Smoke, But Progress—Exploitation of the Canadian Javelin iron ore deposit moved nearer last week as new agreements were announced. But there was some smoke over the details between Canadian Javelin and Pickands Mather & Co. of Cleveland.

Premier Smallwood of Newfoundland said at St. John's that the new agreement (completed after two years of negotiation) will eventually mean a $250 million investment in the Javelin project. He hailed it as "one of the largest in mining history."

Details Spelled Out — Pickands Mather & Co., informed of the statements by Premier Smallwood and Canadian Javelin with regard to the agreements reached last month, said the statements needed the following clarification:

"The 10 pct stock interest previously held by Canadian Javelin in Wabush Iron Company and Wabush Lake Railway Company were acquired for a payment of $275,000 and a small amount per ton to be paid as the ore is mined. (Under the terms of the Wabush Iron agreements with Canadian Javelin, up to a possible maximum of $28,500,000 over a period of many years, providing the lease to the property is not surrendered.)"

Rail Plans — "An additional $275,000 was paid for various other modifications of the agreements beneficial to Wabush Iron Co. All these agreements can be cancelled at any time on short notice, thereby terminating all obligations, including minimum royalties or further payments on account of the purchase of the stock of Wabush Lake Railway and Wabush Iron."

The 42-mile railroad line from the Javelin deposits to the Quebec, North Shore and Labrador Railroad owned by Iron Ore Co. of Canada is now being engineered and construction is to start this summer. Estimated cost is $11 million and there are some indications Iron Ore Co. of Canada may be included in the project.

Labrador Ore Plans Move Ahead

Shipments from Iron Ore Co. of Canada's $175 million development expected by the early 1960's.

Two other iron ore projects in the same area are also pushed.—By Tom Campbell.

▪ Iron Ore Co. of Canada (jointly owned by seven American steel companies and three Canadian ones) is getting ready to kick off a $175 million ore concentrate project in Labrador, Canada.

The project (See The IRON AGE, Nov. 29, 1956, pp 77-78) has already unofficially started. Plans are firmed up and ready to go.

Three-Way Battle—The Iron Co. project is being rushed in view of the competition coming up with a U. S. Steel venture in the area and the Canadian Javelin - Pickands Mather project. (See box above.) All three projects involving concentrated ore will be completed in the early 60's, although the U. S. Steel project may be shipping ore early in 1961.

Where Ore Is—Date of completion of the Iron Ore Co. of Canada project will be early 1963. The low grade iron ore there runs about 38 pct Fe, is easily concentrated, coarse, and in great abundance. The mine will be at Wabush Lake about 37 miles west of Mile 224 on the Quebec, North Shore and Labrador Railway which runs from Sept Iles to Burnt Creek, a distance of 360 miles.

A railroad spur of 42 miles connecting with the main rail line is in the project and may be built by Iron Ore of Canada. (This week there was some controversy over this.) A concentrating plant on the mine site, and a town site are the major parts of the program which will soon be started officially.

Who's Involved—Iron Ore Co. of Canada is composed of the following companies:

Labrador Mining and Exploration Co., Hollinger North Shore Exploration Co., Hollinger Consolidated Gold Mines, Ltd, Republic Steel, Wheeling Steel, National Steel, Armco Steel, Youngstown Sheet & Tube, Bethlehem Steel, and M. A. Hanna. The company is an owner-consumer setup although some of the iron ore is sold with M. A. Hanna as sales agent.

Terms of Sale—The new concentrated ore will be sold to Iron Ore Co. of Canada owners, to American steel firms other than IOCOC members, and to British and European firms as well as to Canadian steel mills. It will be sold as is or it may be mixed with open pit ore from upper Quebec and Labrador mines near Burnt Creek, 360 miles north of Sept Iles on the north shore of the St. Lawrence.

U.S. Maps World Trade Strategy

Planners Are Out to Beat Red Economic Threat

In Washington, the counter-offensive for winning more world markets is shaping up.

Plans are along lines recommended by The IRON AGE months ago.—By G. H. Baker.

▪ The government is beginning to produce some firm plans of offense for thwarting the worldwide Soviet economic war.

In Washington, both the Congress and the executive branch of the government are designing a bold new program of federal action. The program, not yet made public, includes substantial increases in loans, some direct aid, and specific trade incentives.

There is speculation that tax incentives and outright subsidies may also be included. But there is much debate over the wisdom of including these economic weapons in the package of action, due to the prospective losses in revenue to the U. S. Treasury.

Major Study Completed—At the White House, President Eisenhower and Clarence Randall, Ike's ranking executive on cold-war strategy, are examining a new report on proposals for U. S. countermeasures to Red economic aggression.

The report was prepared by a subcommittee of the Business Advisory Council, a unit of businessmen advising the federal government on a continuing basis on economic matters. Thesis of the report is that the U. S. must prepare to increase substantially its overseas lending programs.

Sen. Johnson Calls—In the U. S. Senate, there is similar awakening to the dangers of the economic cold war that now confronts us. Senate Majority Leader Lyndon B. Johnson, D., Tex., is publicly calling for more "get-up-and-go" on the part of businessmen in beating back the Red economic thrusts.

Sen. Magnuson Acts—Within the framework of the U. S. Senate, other units are meeting the call to action. Chairman Warren G. Magnuson of the powerful Interstate and Foreign Commerce Committee is personally directing a new 10-man subcommittee in exploring new avenues for attack in the cold war.

Senator Hubert H. Humphrey, D., Minn., an ardent student of Soviet economic strategy, is urging President Eisenhower to create a top-level commission of experts to recommend new and better ways for waging the war of trade.

Can Prices Be Lowered?—Senator John Stennis, D., Miss., also is calling for action. He is urging his colleagues to set up a select Senate committee to study a new export subsidy program to counteract Red advances in world trade. He declares that U. S. export prices must be reduced to competitive levels.

The need for crusading action, meanwhile, grows daily. Months ago, The IRON AGE called attention to the constantly-growing vacuum in the U. S. trade offensive (The IRON AGE, Sept. 11, p. 135; Oct. 9, p. 45). And John L. Burns, president, Radio Corp. of America, has suggested the creation of a government group of top-ranking leaders from many lines of business and industry to prepare long-range planning on every front of the cold war.

Others at Work — Within the U. S. State Dept., still another special group of business executives is advising on ways and means for U. S. industry to build plants and to invest capital abroad. Their study is due for completion around March 1. It is being directed by Ralph Straus, of R. H. Macy & Co.

Further, the World Trade Advisory Committee of the U. S. Department of Commerce, another advice group, is preparing strategy recommendations for the Secretary of Commerce.

An Awakening in the Senate

SOUNDING THE CALL: Sen. Lyndon Johnson, left, calls for a foreign trade advisory committee of businessmen. Sen. Hubert Humphrey, right, urges formation of a top-level commission to wage war of trade.

Better Heat Pump

▪ York Div., Borg-Warner Corp., has made its "better mousetrap" bigger to try to widen the path to its door.

It designed and constructed the world's largest air source heat pump to both heat and cool the 220,000 sq-ft Flick-Reedy Corp. plant at Chicago. Flick-Reedy makes hydraulic and air cylinders, and pipe-thread sealing nuts.

Good Show—And York successfully fought off the challenge of conventional oil heat - mechanical cooling units on economic grounds. The combination of the larger heat pump to handle major industrial plants, and the improved cost competitive situation is definitely considered a breakthrough.

Actually, the conventional heating-cooling unit would have cost Flick-Reedy a little less — about $500,000 compared to $540,000 for the big heat pump. But Frank Flick, president of the company, believes operation and maintenance costs heavily favor the heat pump.

Money in the Bank—Estimates are that it will cost about $7,200 to heat the plant during the first winter. With conventional oil heating equipment the cost would be about $12,000.

And the heat pump requires no fuel storage space, as with oil, has no smoke problem, and is relatively simple to maintain.

This heat pump literally extracts heat from the air. In the winter this is discharged inside a plant, while in the summer the heat is transferred outside and dispensed.

Heats Homes Too — The heat pump people are also making some headway in residential sales. Only about 500,000 homes in the U. S. are electrically heated and most of these use resistance heating rather than heat pumps. But the move is on. Commonwealth Edison, of Chicago, reports at the end of 1958, 1300 homes in the area were electrically heated, compared to only 150 in 1957.

PRINCIPALS: Frank Flick (l.), president, Flick-Reedy Corp., checks plans of the world's largest air-source heat pump his concern just bought from York Div., Borg-Warner, Roy C. Ingersoll (r.) chairman.

Warehouses Pad Stocks

Steel service centers are enlarging their stocks against a possible steel strike — with a predicted build-up by July 1 to about 3.7 million tons.

That's the prediction made by Robert G. Welch, executive vice-president, American Steel Warehouse Assn. Addressing a meeting of the Purchasing Agent's Assn. of Philadelphia he estimated present ware-house-stocks at 3.4 million tons.

An increase to 3.7 million tons by July would put distributors more than a million tons above their inventory level at start of the 1956 steel strike.

Aid for Self Employed Makes Headway

The Simpson-Keogh plan, for tax incentives to encourage individual retirement programs, is off to a good start toward passage.

The House Ways and Means Committee approved it, H. R. 10. It is probable the House will support the measure. And Sen. Morton (R., Ky.), introduced an identical bill, S. 841, in the Senate.

For the Golden Years—Income tax deferment to allow investment in approved retirement plans is the key provision. The qualified person could postpone payment of taxes on $2,500 a year, or 10 pct of net earnings, whichever is the lesser. His lifetime tax-deferred investment could equal 20 times the maximum annual deduction.

About 10 million persons in the U. S., including more than 4 million small businessmen, are self-employed, Sen. Morton figures.

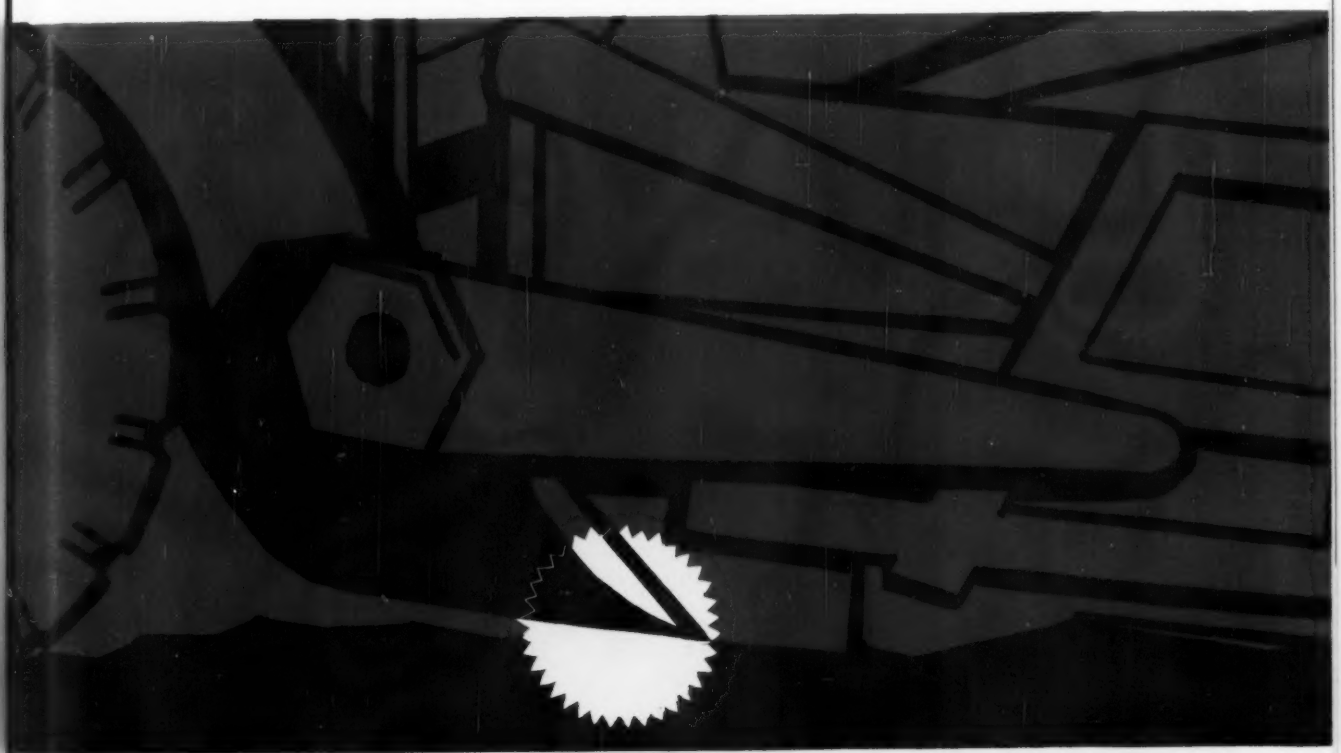
Ohio SUB Bill

A bill to let workers collect supplementary unemployment benefits as well as state aid passed the Ohio state Senate. The next step: The state House of Represenatives.

The bill which would end the current impasse (The IRON AGE, Dec. 11, 1958, P. 92) drew only four Republican votes.

ANOTHER NEW USE
FOR BYERS
AMBALLOY STEEL

AMBALLOY TAKES ON TOUGHEST TERRAINS



Gorging this sod-buster's mouth is a test for scraper blade durability. High-strength Amballoy passes this punishing test with excellent resistance to abrasion, corrosion, shock and fatigue stress.

From scraper blades to landing gear mechanisms—wherever the service is severe—steel users are switching to Amballoy to satisfy tough specs. Manufacturers of powerful earth moving equipment have to be keen judges of quality materials. Careful metal selection for vital parts is a must. That's why Amballoy's high strength and abrasion resistance get such important consideration for this punishing service. And Byers' ability to roll exacting, intricately shaped sections to demanding scraper blade requirements opens up additional areas of product improvement.

Amballoy's range of applications is broad. The Byers metallurgist can match the special qualities of our electric furnace steels to your critical parts requirements. He *knows* his metals. Why not call him? Contact: A. M. Byers Company, Clark Building, Pittsburgh 22, Pa.

personalized quality steels from a technically competent source

A. M. BYERS COMPANY

Bridgeport Ultra Fine Grain Brass puts more allure in a lure ...and more profit in your product!

Clear, polished or painted, "Dardevle" fishing lures, made by Lou J. Eppinger Mfg. Co., Detroit, Mich., are world famous for their deadly, sure-fire allure.

There's more than one reason for this magic appeal. But to designers and production men, the most important is the Bridgeport Ultra Fine Grain Brass from which the lures are made. This ductile, easily formed brass provides superior surface properties which help cut finishing costs to the bone.

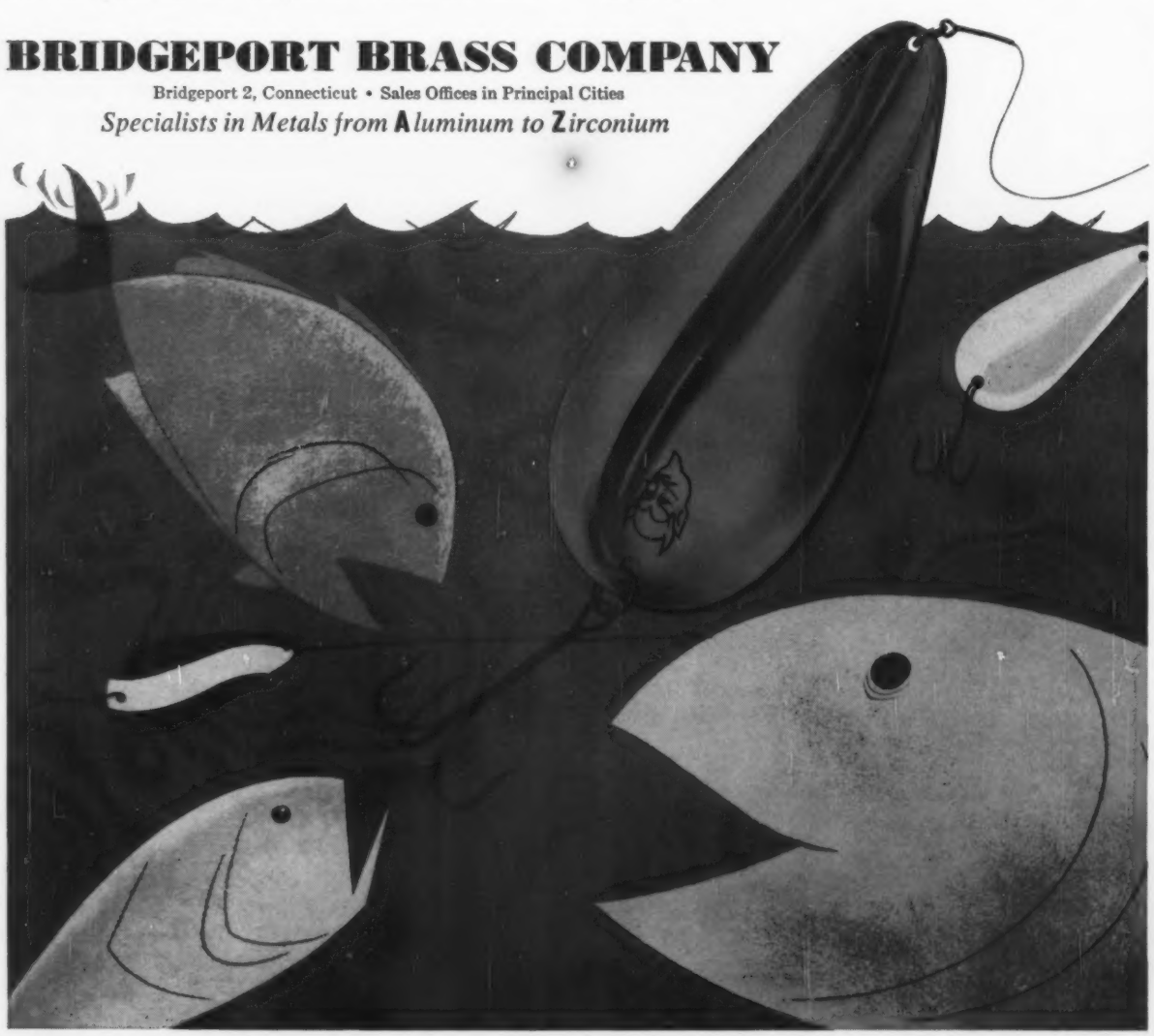
In Eppinger's case, for instance, some of the lures are clear polished and lacquered. Others are hand-painted. Ordinarily, these two different operations would call for two different types of metal. But, by using Bridgeport Ultra Fine Grain Brass, the same material can be used for either finish, an important purchasing saving.

If you're fishing for ideas on how to reduce your strip metal finishing costs, cast a line in Bridgeport's direction. Call your nearby Bridgeport Sales Office . . . or write direct for a copy of our Ultra Fine Grain Brass booklet, GRAIN SIZE, THE FOURTH DIMENSION. Dept. 3402.

BRIDGEPORT BRASS COMPANY

Bridgeport 2, Connecticut • Sales Offices in Principal Cities

Specialists in Metals from **A***luminum to* **Z***irconium*



I. Melville Stein

Making Sense Out of Computers

So much is being said about computers it can be difficult to sift fact from fiction.

Mr. Stein, a seasoned electronics expert, takes a long, hard look at computer progress.

▪ Have computers opened the door to a new kind of industrial revolution? Or has their potential been exaggerated?

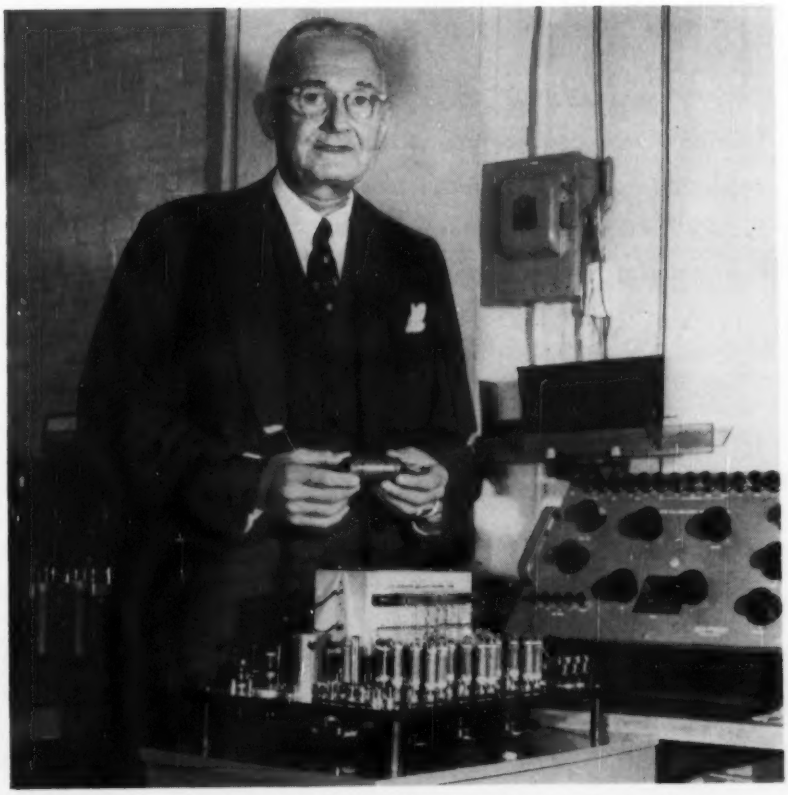
To I. Melville Stein, president, Leeds & Northrup Co., the answer to both these questions is a qualified "Yes." He is optimistic about the future of computer controls in process industries, but he warns of the dangers of "promising too much too soon."

A Time for Caution — "I am much concerned about the setback computer control may experience if, as the result of promising too much too soon, there are many disappointments in actual performance," he says.

While computers have had tremendous success in certain technical, statistical, and military uses, there have been too many failures in office applications, he points out. And in the field of automatic control of continuous processes, there is much more involved than sound computer techniques, he warns.

Basic Approach—He makes two points: A process plant must be susceptible to computer controls if advantages are to be realized, and computers should be regarded as a refinement, not a substitute, for process-variable controls.

To further this end, Leeds & Northrup joined forces with Philco Corp. about a year ago to develop a computer that is adaptable to process industries. The outlook, says Mr. Stein, is encouraging.



I. MELVILLE STEIN: Unbridled enthusiasm may cause setbacks.

Worked With Edison — Mr. Stein's desire to see an orderly advance into the computer era stems from years of experience in developing new products.

A native of Long Branch, N. J., he got his first job with the Edison Co. more than 40 years ago. Thomas Edison thought enough of young Stein to take him on as a special assistant.

While Mr. Stein's own brand of genius was developing before he met Edison, there is little doubt that the influence of the Wizard of Menlo Park had a lasting effect on him.

Career at L&N—Shortly after World War I, he joined newly-formed Leeds & Northrup as a sales engineer. He moved up into the research department and was research director for many years. In 1952 he was elected executive vice president. Two years later he became president.

Today, Mr. Stein has a mile-long string of patents to his credit. And he has been honored with many professional and civic awards for his work. With his help, Leeds & Northrup has become a leading producer of electronic controls, instruments, and industrial furnaces.

A BETTER START

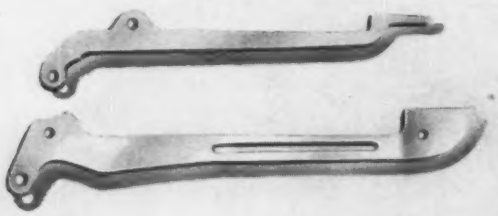
for YOUR product with

Cold Rolled Spring Steel

HERE'S HOW A "BETTER START" MADE THESE PRODUCTS BETTER:

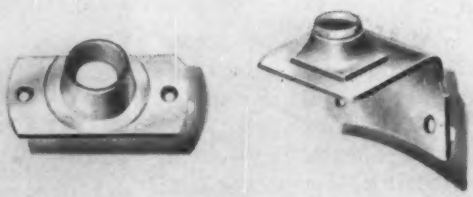
BUSINESS MACHINE PARTS:

- Eliminated grinding for gauge accuracy
- Improved stamping properties
- Reduced warpage in heat treatment
- Improved forming qualities



FASTENERS:

- Improved drawing qualities
- Reduced rejects
- Lowered production costs
- Cut quality control costs



COLD ROLLED SPRING STEEL MET THESE RIGID SPECIFICATIONS

ANALYSIS: AISI 1055 • **ROCKWELL:** B 85-95
MICROSTRUCTURE: Uniform grain structure and carbide distribution
GAUGE TOLERANCE: ± .0003" including crown
WIDTH TOLERANCE: ± .005"
SIZE: 2" x .0384"
FINISH: No. 2 • **EDGE:** No. 3
COIL SIZES: 200/250 lbs. per in. width

ANALYSIS: AISI 1045 • **ROCKWELL:** B 72 max. Deep drawing qualities
MICROSTRUCTURE: Well rounded and uniformly distributed carbides in a ferrite matrix
GAUGE TOLERANCE: ± .001"
WIDTH TOLERANCE: ± .005"
SIZE: 1½" x .020"
FINISH: No. 2 • **EDGE:** No. 3
COIL SIZES: 200/250 lbs. per in. width

Starting with a better material – quality controlled to *your* exact specifications for the product you make – assures a *better* product – with *important savings* to you.

J&L is your most dependable source for *quality controlled* cold rolled spring steel to standard specifications – or to meet the most exacting demands of your product's custom specifications.

Give your product that all-important "Better Start". Contact J&L today.

Plants and Service Centers: Los Angeles • Kenilworth • (N. J.) • Indianapolis • Youngstown

STRIP

LOW CARBON • HIGH CARBON • ALLOY • STAINL
TEMPERED SPRING STEEL • ZINC AND COPPER COA

Jones & Laughlin Steel Corporation • STAINLESS and STRIP DIVISION • Youngstown 1, Oh

The Real Issue on Featherbedding

If the railroads back their drive against featherbedding, the public will have a vote.

The question is whether "make-work" policies are approved. Or can industry make use of new technology?

▪ It looks like the public will be forced to face up to a major issue of labor relations. Just how far will it go in backing up management attempts to cut out featherbedding?

Is it a public issue? It certainly is. The railroads have served notice that they will try to eliminate or cut the $500 million annual bill they pay in featherbedding. But they know full well they can go only as far as the public will back them.

Everybody Does It—The same issue, to varied extents, reaches into every industry. Within broad industrial categories, companies that allowed padding more than their competition have paid the price. At worst the price was failure; at best it was a tough and prolonged labor dispute to equalize work standards.

The railroads are able to state the issue more clearly than other industries. For one thing, featherbedding there stands out more than in most. Secondly, since they are not directly competitive against each other, the case can be put on an industry-wide basis.

Public Opinion—There is some hope that the public may be changing its attitude toward "make-work" measures in union contracts. For years, during and after the depression, approval was general over practices that created jobs of any kind. Now, it's beginning to realize that there are other factors involved.

Last week Daniel P. Loomis, President, Association of American Railroads, made these points:

Featherbedding puts pressures on rate structures and bids up prices, contributing to the inflationary spiral.

It weakens the roads, cuts returns to investors, and freezes out new equity capital needed to expand and improve.

It destroys the jobs it seeks to protect by weakening competitive position.

Partly to Blame—The railroads are vulnerable in that they got themselves in that spot. But they had little encouragement from the government, or even their customers. In the past, they were urged to keep running, even if it meant paying a price.

This year they will have two strikes against them. One, with good first half profits, the unions will say a drive against featherbedding is not justified. Second, any strike will be called a threat against the recovery.

One big issue that every industry, not only the railroads, will have to face up to: Will they be able to take full advantage of the new mechanical devices that are available to cut costs, increase efficiency, and improve the product or service. It's bigger than a mere labor dispute over job standards.

Budget Issues Are World-Wide

▪ The budget issue apparently boils down to this: If you can't balance the budget in good times, when can you?

The Administration holds out future tax cuts as bait if the budget is balanced. Few in Congress took any interest in cuts for next year when weighed against this year's demands from home.

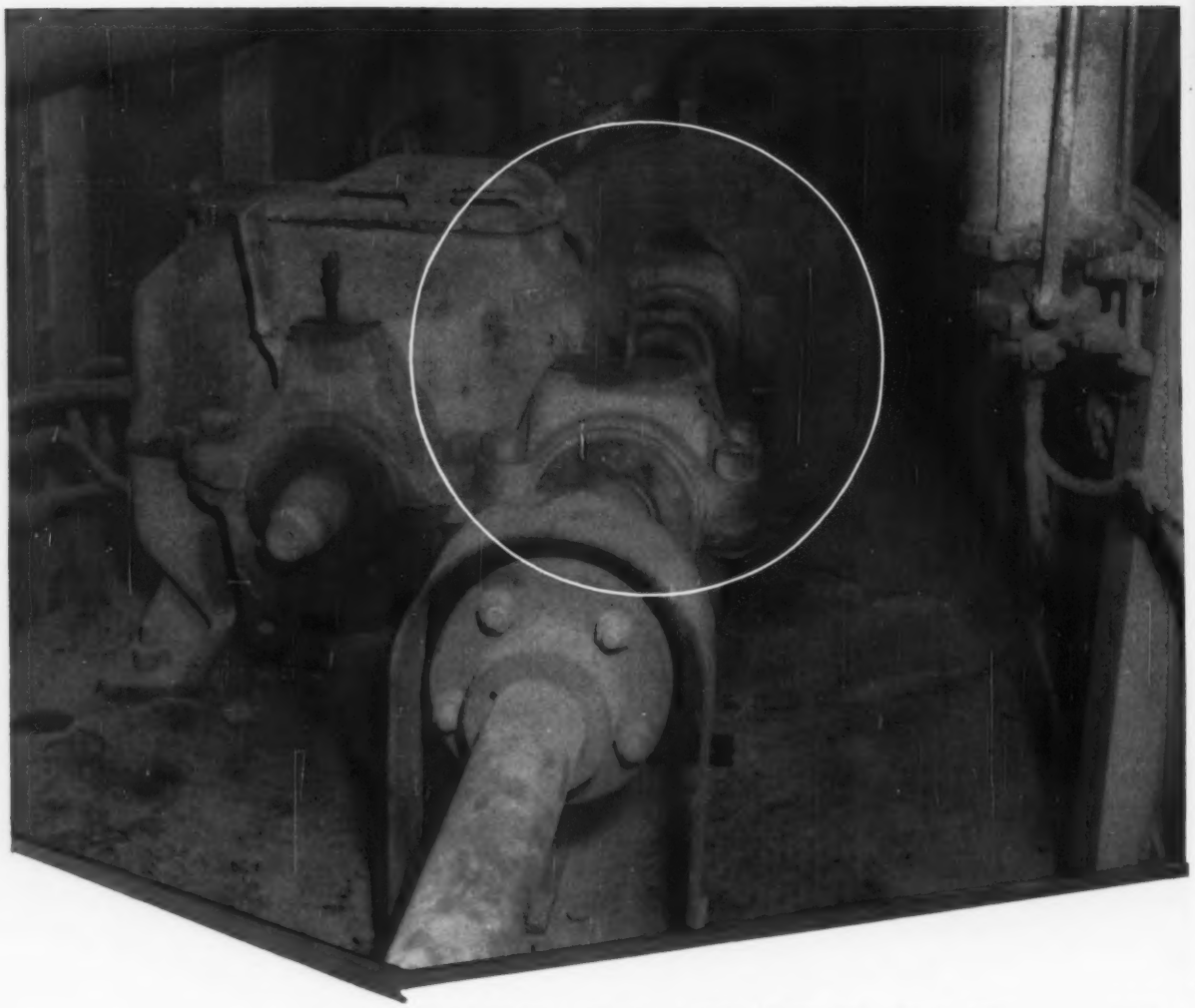
Administration's Case—Treasury Secretary Robert Anderson made a good case for the Administration's budget, but he must have had feelings of frustration while doing so.

What many in and outside business forget is that the Federal Reserve Board can control inflation. But it would at the price of increased unemployment and a hampered recovery. That happened in 1957 and could happen again, although it was unpopular just about everywhere.

World-Wide Effects — It's growing clearer every day that Congress has no interest in avoiding deficit spending. That is necessary before there will be any change in the tax structure, unless upward.

But there's another important factor. Many businessmen are worried about being priced out of world markets. (See Special Report to Management, p. 93) Sec. Anderson declares that inflation at home will accelerate that trend.

"Aside from the losses that this will mean to us," he asks, "How are we to discharge our world-wide responsibilities if our international economic position weakens?"



OVER 20 YEARS OLD . . . yet Bearings, Inc. delivered replacement bearings for these back axles from stock

Our steel mill customer had torn down the motors on his 160 ton open hearth ladle crane for a complete overhaul. These motors were equipped with back axles mounted on roller bearings which had to be replaced.

Our bearing engineer was called when the customer couldn't identify the bearings or the outer races. Our engineer quickly determined that the roller assembly was a standard size and make. He also found that the outer race was a special we had recently supplied another company through a custom manufacturing source.

One pair of these special outer races was still in stock and was delivered immediately with the bearing! The complete order for several pairs was filled within a short time.

This customer now knows what we mean when we promise service! He didn't have too much hope of replacing this assembly from the bearing manufacturer—and finding a complete set in a local stock was not even considered! *You* can get to know this kind of service for all nationally known bearings and bearing accessories if you will call the branch nearest you!

Providing bearing service in the North ➤ **BEARINGS, INC.**

OHIO: Akron • Canton • Cincinnati • Cleveland • Columbus • Dayton • Elyria • Hamilton • Lima • Lockland • Mansfield • Toledo • Youngstown • Zanesville
INDIANA: Ft. Wayne • Indianapolis • Muncie • Terre Haute • **PENNSYLVANIA:** Erie • Johnstown • Philadelphia • Pittsburgh • York
WEST VIRGINIA: Charleston • Huntington • Parkersburg • Wheeling • **NEW JERSEY:** Camden
NEW YORK: Buffalo, Balanrol Corp. • **MARYLAND:** Baltimore • **DELAWARE:** Wilmington

and

in the South ➤ **DIXIE BEARINGS, INC.**

FLORIDA: Jacksonville • **GEORGIA:** Atlanta • **KENTUCKY:** Louisville • **LOUISIANA:** Baton Rouge • New Orleans
N. CAROLINA: Charlotte • Greensboro • **S. CAROLINA:** Greenville • **TENNESSEE:** Chattanooga • Kingsport • Knoxville • Nashville

Can U. S. Hold World Markets?

World trade is booming and U. S. ports (like Philadelphia, above) are busy with the income and outgo of world trade.

But many U. S. companies are concerned about what's happening to their markets abroad. Some fear they are losing out permanently in foreign markets.

They believe that the high cost of manufacturing in the U. S., principally because of mounting labor costs, puts them at a competitive disadvantage abroad.

However, the outlook is not all bad. There's still opportunity for companies willing to shift with changing conditions overseas.

In some areas American technology is still far ahead. Also, the rising world standard of living is creating a demand for U. S. products.

This special report to management takes a thorough look at what's happening in world trade.

In This Report:

How U. S. Fares in World Markets P. 94
Demand Varies for U. S. Products P. 96
How to Get Into Export Business P. 98
Where to Go for Export Help P. 100

How U.S. Fares in World Markets

American industry faces a terrific price handicap in competing for overseas markets.

But price is only part of the story. World markets are going through a period of vast change, with great new potential.

▪ A new era of expanding world trade is in the making.

European governments are sound; their currencies firm. New mass markets and trading areas are being created. Trade barriers are coming down all over the world. Underdeveloped countries are clamoring for the tools to raise their standards of living.

Yet many American businessmen are worried over prospects of competing in world markets. After more than 20 years of steady growth, they fear a decline in U. S. exports, particularly manufactured goods and metalworking products.

Spreading Gloom — There are two major factors that contribute to the gloomy outlook on world trade held by many U. S. manufacturers:

First, high prices of American manufactured goods that are pricing many products out of world markets.

Second, development of the European Common Market, and possible creation of other free trade areas. While new mass markets result for member nations, it is feared external barriers will discriminate against outside nations, specifically the U. S.

Big Picture—But a look at the overall foreign trade picture shows export is still active, in spite of price, tariff, quota and other hampering factors.

Total U. S. non-military exports rose from $9,993,000,000 in 1950 to a high of $19,455,000,000 in 1957. They slumped last year to $16,400,000,000. Only a modest increase is forecast this year.

Experts agree 1957 is not a typical year. The Suez crisis resulted in out-of-proportion exports of oil and other raw materials. With the expected increase, total exports are not likely to climb above the 1956 level this year.

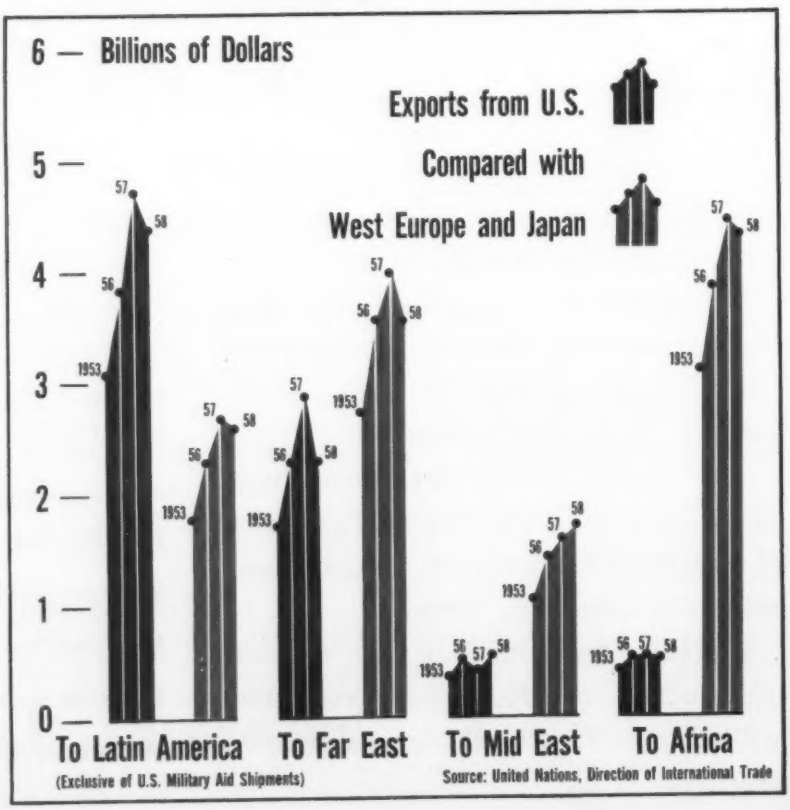
U. S. Holds Its Share—Overall, U. S. exports are holding their own with major competition in terms of share of the market (see charts below).

An analysis of price trends by the U. S. Bureau of Foreign Commerce indicates this: Although wages are up substantially in the U. S. since 1953, the climb has been less rapid here than in West Germany, France, and the United Kingdom, although more than in Italy.

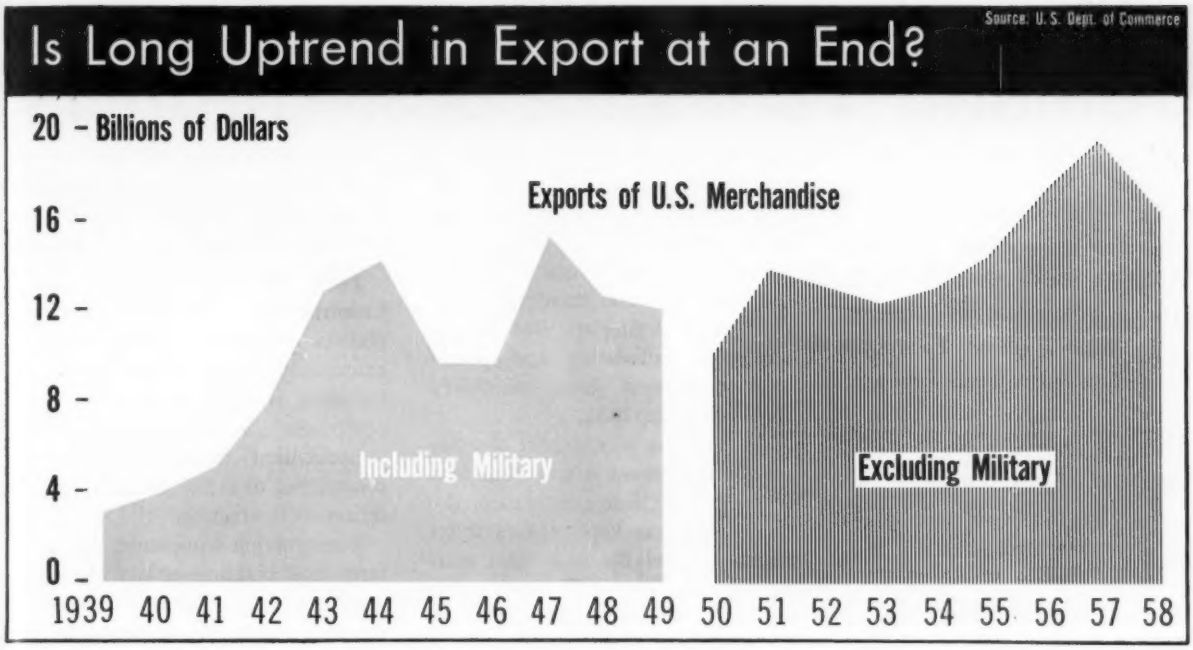
At the same time, output per production worker-hour has climbed more rapidly in Germany, France and Italy than in the U. S., more slowly in the UK.

Labor's Role — The conclusion: The change in average cost of labor since 1953 has been about the same in the U. S. as in West Germany and France, where steeper wage gains offset greater productivity gains. It has risen considerably more in the UK, but less in Italy.

Is U.S. Holding Its Share?



Is Long Uptrend in Export at an End?


Source: U.S. Dept. of Commerce
20 - Billions of Dollars
Exports of U.S. Merchandise
16 -
12 -
8 -
4 -
0 -
Including Military
Excluding Military
1939 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58

Where does this leave U. S. manufacturers? In terms of labor cost disadvantage, about the same place where they have always been. U. S. labor costs have always been higher, are not higher, proportionately, today.

Squeeze Over—But at the same time, a most important change has occurred in major export countries. The long period of shortage of goods and materials that resulted from World War II is ended. Their industries are now able to satisfy markets at home to a great extent, and they are looking abroad for new markets.

This means greater competition for most exports, even where U. S. quality and service reputation can still offset higher prices. But for many products, where European manufacturers can compete in quality and service, and undersell in price, overseas markets are disappearing, perhaps forever.

Other Cost Factors—The cost disadvantage of manufacturing in the United States is not as clear cut as wage rates indicate. The Bureau of Foreign Commerce's inserting productivity change is one aid in evaluating cost trends.

But there are other factors. The cost of management, supervision and technical help may be higher abroad because of lower skills. Materials' costs tend to be higher. These tend to offset lower wages.

Generally speaking, the greater the labor factor in manufacturing a product, the greater disadvantage to the U. S. producer.

New Markets Coming—In spite of the labor cost disadvantage, discriminating tariffs, and transportation costs, many U. S. manufacturers look to added markets in Europe and elsewhere.

The great improvement in living standards expected in Europe will create new demands abroad that cannot be met entirely by local manufacturers. The demands of Common Market countries, as they feel the effects of mass markets, will create demand for U. S. goods.

Going Overseas — However, as U. S. manufacturers survey the world situation, the trend is definitely to much more manufacturing abroad.

Manufacturers of some products are convinced the only opportunity of their holding or developing new world markets is through manufacturing abroad. (IRON AGE, Jan. 8, p. 39)

Wage and transportation savings are only part of the attraction of foreign manufacture.

Others are access to markets, tax incentives offered by many countries, possible elimination or reduction of duties on materials and parts for local manufacture. Local participation in the development of foreign markets can be a big advantage.

Furthermore, import restrictions may make local manufacture the only possible way to tap a foreign market. The easing of convertibility makes foreign investment more attractive.

Too Much Pessimism—Many experts on foreign trade believe the pessimistic aspects of export are over-emphasized at the moment.

The plus factors, like the rising standard of living world-wide, the tremendous trend to freer trade throughout the world, are more difficult to evaluate.

Furthermore, they believe the cost advantages now enjoyed by many countries will tend to decrease as wage rates will equalize abroad. But that's well into the future.

An IRON AGE Special Report to Management, Part II

Demand Varies for U.S. Products

▪ **"Almost all imports of packaged air conditioners presently come from the U. S. But German and Italian units have come into the market on a price basis. It is likely U. S. products will no longer control the market. . ."**

"It does not seem reasonable to expect an increase in imports of U. S. refrigerators, in spite of the fact that they have earned a good reputation. . ."

"Trend to local manufacture will increase, but market for parts should be good. . . ."

These are actual excerpts of Bureau of Foreign Trade foreign officers' reports. They are part of a new study of the export outlook for refrigerators and air conditioning units.

Substitute almost any conventional U. S.-made product and you will have what American manufacturers face abroad. Foreign manufacturers, who always could produce simple products at lower costs, are now raising their sights at products that were once dominated by the U. S. in world markets.

Constant Change—This doesn't mean that the export market for the U. S. is necessarily fading away. But it does mean that it is changing.

U. S. manufacturers who want to export, not invest abroad, have two possibilities:

They can conduct extensive market research abroad to find markets for their products or a demand for products they can make for export.

Raise Sights—And they can raise their sights again and make products that are still ahead of foreign technology.

For example, the overseas market for standard machine tools is fast disappearing. But, the market for special purpose machine tools has great potential.

Another: The overseas market for typewriters and standard adding machines is drying up. But sales of electronic calculating and punch card equipment have multiplied four-fold since 1952.

In the same way, export of automation equipment is not much of a factor today. For one reason, demand here has kept makers fully-occupied. But the new mass markets of the ECM will create a big new demand in this field which only U. S. industry is equipped to fill.

Untapped Markets—There is no way of measuring what export markets could be tapped by extensive market research. But considering the fact that most companies enter the foreign market only after being approached from abroad, it's logical that research of foreign markets would show great potential markets.

The outlook for many products is not encouraging. For others, it is. Here is a general rundown of export outlook for typical U. S. products:

Steel: Exports have increased since World War II. But in view of the growth of capacity abroad, with its lower-cost product, the outlook is for diminishing export. An exception may occur when a country wants to take advantage of U. S. capacity for early delivery. One-third of U. S. steel exports go to Canada.

Specialty products and sizes not produced in European mills (extremely wide plate and sheets for example) still have good markets in Europe.

Automotive: Restrictions and tariffs have hit hard. More important is the fact that U. S. cars are not designed for conditions abroad. U. S. car makers are producing heavily in Europe. Demand for most U. S. cars has dwindled to the strictly luxury markets or Americans living abroad.

Farm Machinery, Mining and Construction: Farm implement makers are manufacturing abroad extensively. There is little demand for small tractors, but track laying equipment is in demand abroad.

Specialized mining equipment constructed to fit the particular conditions is flourishing.

Construction equipment, particularly road building, enjoys a steady market abroad. Paving machinery, crushing plants are in demand.

Machine Tools: There is little encouragement for general purpose tools. But development of the common market should create a demand for special purpose tools and automation equipment. One source of export for machine tool makers will be from U. S. manufacturers going abroad.

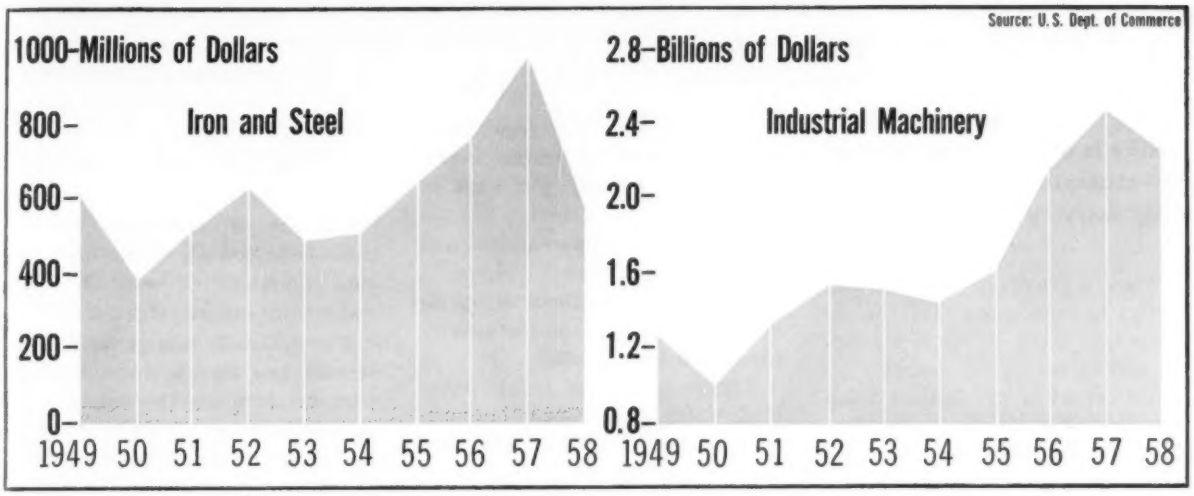
The price differential for general purpose tools gives European competitors a 20 to 40 pct advantage.

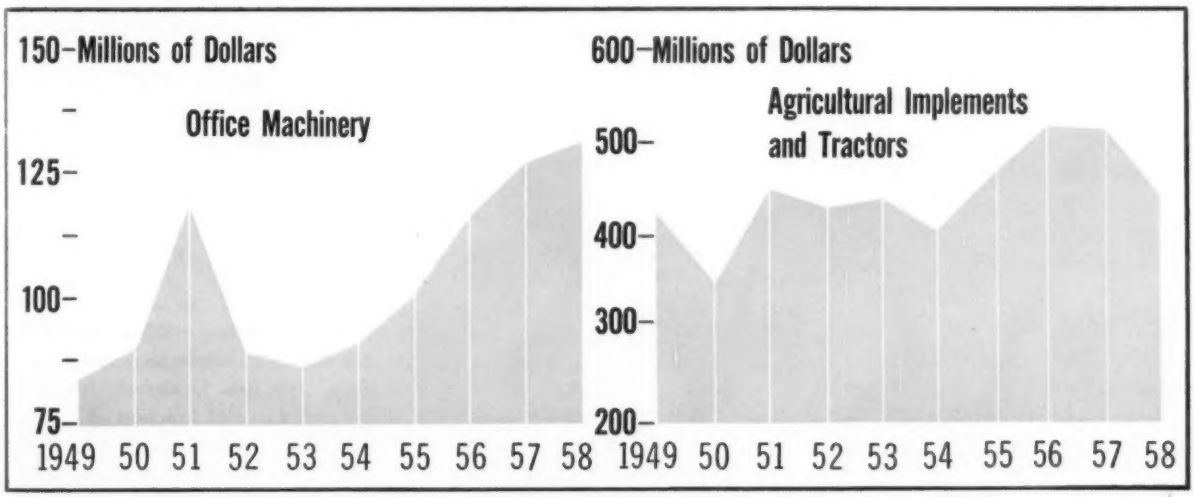
Office Equipment: The overseas market is dwindling for standard items. Lower-cost, foreign-made typewriters, adding machines and the like are running U. S. products out of the market. But parts exports have jumped and have held up total exports. U. S. companies can make parts and components more economically, but the cost of assembly is high.

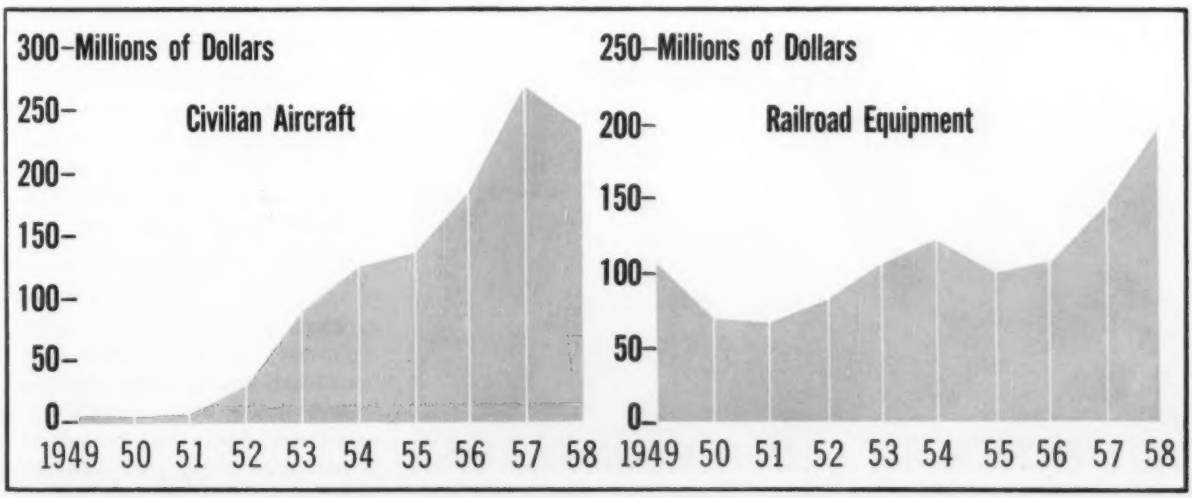
Electronics: Exports of electronics products have increased from $292 million in 1953 to $380 million in 1958. This is one of the few categories to gain over 1957. Equipment and components showed a $50 million increase.

Standard electronic items can be mass-produced in the U. S.. at costs that counteract lower wages abroad. New assembly facilities abroad will continue to create a market for components and parts.

Ups and Downs of U. S. Exports







An IRON AGE Special Report to Management, Part III

How to Go Into Export Business

If you make a product that serves a need in foreign countries, you can get into export.

Here is a rundown of some of the channels available to develop markets overseas.

▪ When a European manufacturer decides to build a new plant, he assumes that about 40 pct of his output will go out of the country.

But export is the farthest thing from the mind of a U. S. manufacturer when he plans new facilities. The result is that the typical American businessman is woefully ignorant of the fundamentals of foreign trade.

What to Know—Here are a few things you should know before venturing abroad with your products:

What are the laws, regulations, practices and current market conditions of the country you want to ship to?

What are the import quotas and currency regulations?

What are the methods of operation and of payment in the country considered for export?

The complexity of foreign trade tends to frighten off many businessmen at the start. But you don't necessarily have to have a large staff of international experts to launch some export business.

There are several basic channels of foreign trade: The export merchant, combination export manager, your own export department, licensing for manufacture abroad, and overseas manufacture through a foreign subsidiary.

Approached from Abroad—If your company is typical, its first indications of an export market came from abroad. Some one saw your equipment, or heard about it, and wanted one like it.

For a small volume or initial venture into foreign trade, the export merchant may be satisfactory. He will buy your products outright, and sell into the foreign market on his own account.

The advantage is that no risk is involved nor overseas organization needed. The disadvantage is that you lose contact with your customer. Nevertheless, for many commodities, the export merchant may be satisfactory.

But suppose your volume grows and you want to maintain control of your product, to develop more intimate contact and expand.

Export Manager—The next logical step is to retain an export manager. His firm is already handling the entire export function of a number of companies. He has the organization abroad, the knowledge of the markets and the intricacies of doing business in foreign nations, the foreign language background, and the general export knowhow.

For many companies, even large ones, the export manager acts as the official export division, frequently using the letterhead of the company represented. He may be paid by commission, or retainer plus commission.

Licensing—But as volume grows, you may add your own overseas personnel, develop your own sales offices, make direct contact with customers, go into other countries. Then, your own export division is warranted.

GOING ABROAD: Buses go overseas through Delaware River port.

But, as pointed out previously, economic and political conditions are creating a major trend to manufacturing abroad. For the moderate-sized company, licensing can be the answer.

The export manager, frequently from necessity, has gone into the licensing field to a big extent.

Thomas C. Ballagh, president of the large export manager firm of Ballagh & Thrall, Philadelphia, says that among the companies of the size served by his firm, interest in licensing has mushroomed.

Accordingly, his firm, as typical of other large export managers, now performs licensing services. This includes locating suitable licensees, obtaining agreements, locating sources of supply, and providing other counseling services.

Has Drawbacks—While a licensing arrangement can be satisfactory and profitable, it has some pitfalls in doing business overseas.

"An agreement that doesn't bring in enough in return to compensate for executive time is not worthwhile," Mr. Ballagh says.

To assure that it does, he recommends that a licensing firm protect itself by insisting on a substantial initial payment, a percentage royalty, and a minimum annual royalty.

Create a Competitor — Other things to protect are your patents, trade mark, and your technical knowhow. (Most foreign countries require that a patent be applied for within a year of the date of patent application in the U. S.)

If you do not protect your product, you may lose your licensee and find yourself with a competitor. Mr. Ballagh points out that a licensing arrangement essentially depends on integrity of the people involved.

Go Overseas — Overseas manufacture involves a major undertaking of any company. It involves build-or-buy decisions, tremendous research into market, political, economic and financial aspects. Nevertheless, with world conditions pointing that way, many companies are investing abroad.

Follow the Rules Overseas

▪ Few businessmen would expect to sell anywhere without learning something about their market and customers. For foreign sales, it means broadening the scope.

It's impossible to know too much about your foreign customers. Ignorance can be very costly. This type of busines cannot be a quick-in quick-out operation, if it is to be successful. You must take it seriously.

Begin at the Beginning—This may seem elementary, but to ignore it means killing off a foreign operation before it gets under way. Bureau of Foreign Commerce officials can cite amazing examples of business lost by simple failure to answer inquiries.

American products are almost universally liked and wanted. New attention to overseas business has resulted in products specially designed for the countries where they are to be sold, with profitable results.

Knowledge Pays — Manufacturers no longer blandly assume, for example, that the 60-cycle household current is standard around the world. It would be unusual to find a machine tool builder who neglected to have control plates translated.

But there are still failures to allow for climatic extremes, primitive transport, and lack of skilled service in many parts of the world.

When in Rome—Doing business abroad will inevitably reflect national traits. Europeans are often more conscious of social status than Americans. This awareness frequently shows in elaborate company protocol.

In Spain, the siesta is still a way of life. The Briton still stops for tea with scant respect for American efficiency experts. And some foreign executives can stretch business secrecy to comic-opera extremes.

But business is business, however, and businessmen around the world resemble each other far more than they differ.

Adapting to local business customs is rarely too much of a strain, if taken seriously.

It's an unfortunate fact that Americans are going through a period of great unpopularity abroad. For this reason, close attention to the rules of business abroad is most important.

Rule Book—Proper selection and training of personnel is essential for overseas operations. Here are some specific points made by successful international businessmen:

1. Employ and promote foreign nationals wherever possible. Cost of training programs adapted to local needs can pay big dividends.

2. Screen personnel carefully. Insist that personnel for overseas posts learn the language of the country. Interpreters are cumbersome and universally resented.

3. Face frankly that screening wives and older children is as important as selecting the man himself.

4. Discourage "American colony" living as much as possible.

5. Encourage participation in the social life of plant communities.

6. Discourage political activity and association with political groups.

Where to Go for Export Help

▪ The Bureau of Foreign Commerce of the U. S. Dept. of Commerce is charged with promoting the foreign trade of the U. S. Toward that end, the Bureau will provide you with extensive information and assistance on world trade.

Here is a condensed summary of the services of the Bureau, all available to the U. S. businessman:

Consultation

The Bureau provides data and access to specialists for consultation on all phases of world trade. These subjects receive regular staff attention:

1. Transportation and Utilities—Data on adequacy of facilities, rates and policies, and regulations of transportation and public facilities abroad.

2. Insurance — Information on insurance aspects of international trade, including data on foreign laws.

3. Travel — Central clearing house of the Government for coordination and action on travel problems. Data on extent of international travel.

4. Industrial Property Rights — Information on industrial property rights abroad. These rights, including patents, design patents, trademarks, and copyrights, are protected in most countries. Changes and proposed changes are evaluated and data supplied to interested companies.

5. Foreign Tariffs or Trade Controls—Information on such subjects as import licensing and exchange controls, marks-of-origin regulations, import tariff rates.

6. Commercial Policy—Constant review of all policy developments which may affect activities in international markets.

7. Trade Statistics—Information on foreign trade of many countries, as well as U. S. trade statistics.

8. Investment Conditions — Information on conditions which affect investment abroad.

9. Trade Fairs and Exhibitions.

Service Aids

The Bureau has developed many tools and service aids. Information is available on:

1. Trade Lists—Prepared by the U. S. Foreign Service, lists name of principal companies engaging in specified trades, addresses, size, type of operation, products and territory.

2. World Trade Directory Reports.

3. Agency Surveys — Agency survey service is available when trade list service is not adequate in selecting a new agent in a foreign market.

4. Trade and Investment Opportunities.

Other Facilities

1. Commercial Travelers' Service — Foreign Service posts are notified of visits of U. S. businessmen, and commercial introductions arranged.

2. Trade Adjustment Service — To assist in maintaining favorable commercial reputations abroad, and to minimize international ill will, the Bureau facilitates adjustment of small trade disputes.

Publications

Special publications are issued by the Bureau and are for sale by the Superintendent of Documents, U. S. Government Printing office.

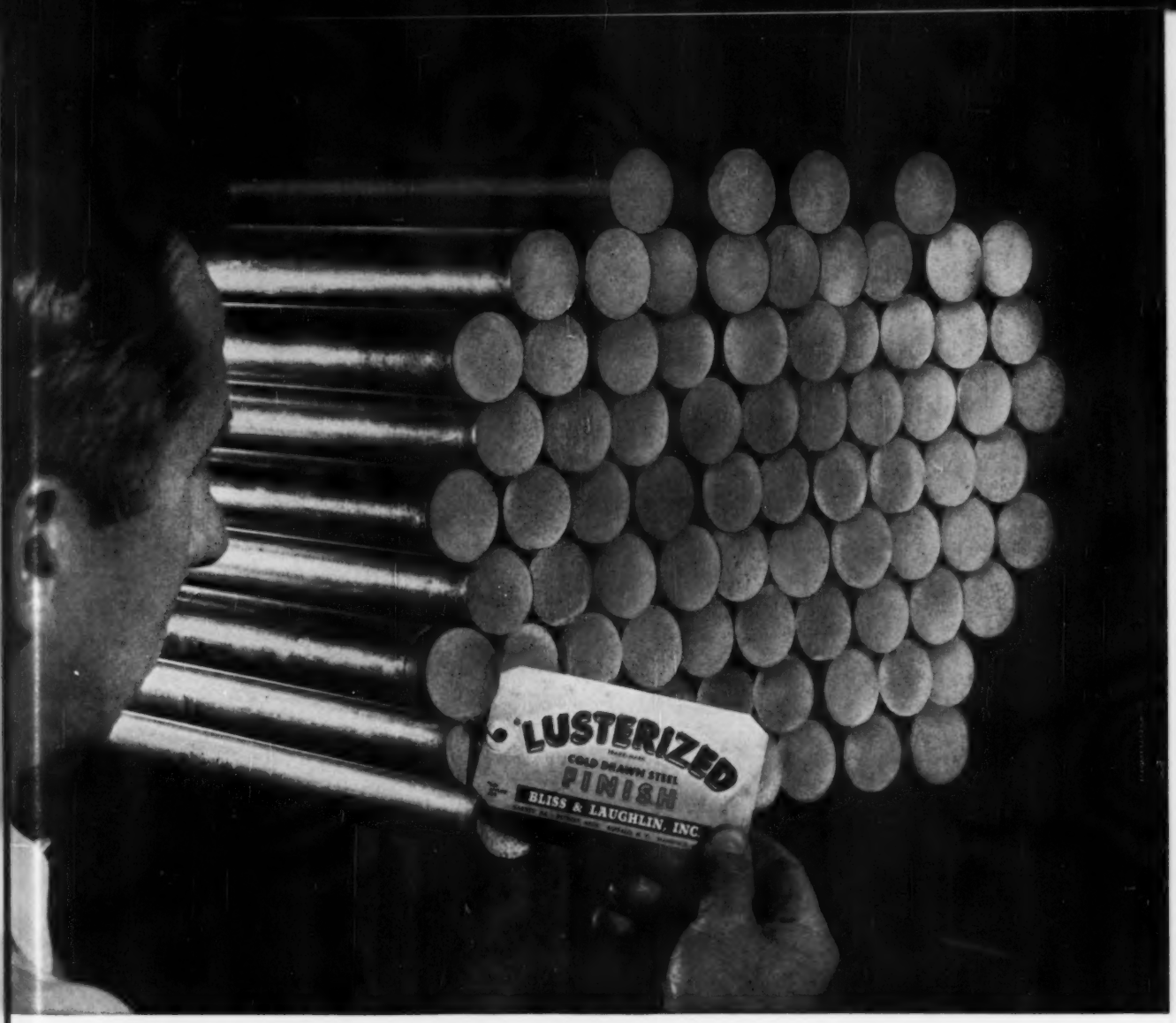
Following are some of the principal publications: Foreign Commerce Weekly; World Trade Information Service, issued in four parts: Part 1—Economic Reports, Part 2—Operations Reports, Part 3—Statistical Reports, Part 4—Utilities Abroad; Investment Handbooks; Comprehensive Export Schedule; Channels for Trading Abroad; Foreign Trade Practice.

Field Offices

Specialists in world trade are available for consultation in Field Offices of the Dept. of Commerce. All materials in the Washington headquarters and tools and service aids are available at those offices.

Most businessmen are advised to consult the nearest field office before contacting the Washington office.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.



Is Your Production Benefiting from the BIG DIFFERENCE in Cold Drawn Bars?

These benefits are realized immediately when you take advantage of the big difference in cold drawn steel bars—the exclusive Bliss & Laughlin Lusterized Finish difference:

The absence of drawing oils, lime and processing grit smooths out production runs, keeps automatic screw machine collets and collet sleeves free from clogging and enhances tool life. The Lusterized surface requires no machining for many parts. Pre-production handling is less messy, thanks to a Bliss & Laughlin inspired contamination-resistant protective oil.

Another development from nearly 70 years of research and leadership in producing cleaner and brighter cold finished steel bars, the exclusive Bliss & Laughlin Lusterized Finish costs no more. All Lusterized carbon bars conform to the new, closer tolerances recently announced by Bliss & Laughlin, too. That is why it pays doubly well to specify Bliss & Laughlin Lusterized Finish.

If the benefits of Lusterized Finish have not been demonstrated for your production, a visit with a Bliss & Laughlin representative will be rewarding. There is a good chance that the big difference in cold drawn steel bars can make a big difference in your production, also. Why not write or phone your Bliss & Laughlin representative now?

Originators of LUSTERIZED® Finish—The BIG DIFFERENCE in Cold Drawn Steel Bars

BLISS & LAUGHLIN

GENERAL OFFICES: Harvey, Ill. • PLANTS: Harvey, Detroit, Buffalo, Mansfield, Mass.

"We are WELL SATISFIED with our

BULLARD

Cut Master V.T.L., Model 75

Extreme accuracy is mandatory for a number of machining jobs at the Fuller Company, Manheim, Pa. For example, according to Mr. M. L. Strayer, Machine Shop Supt. "the largest volume piece we process on our Cut Master, Model 75, is the facing of seats for cement diverting valves. They must be perfectly flat. This critical operation is done so accurately on the Bullard Cut Master, Model 75, that with a little hand lapping we have an airtight joint."

This machine has a 24" extra high bed, speed range 6.8 to 250.0 R.P.M. Equipped with 5 sided Turret Head and 4 sided Side Head, both hand indexing, 4 jaw hand operated chuck.

This "built-in" accuracy, which is inherent in every Bullard Cut Master V.T.L., Model 75, can be applied to your work.

CALL YOUR BULLARD SALES OFFICE
OR DISTRIBUTOR FOR THE COMPLETE STORY

THE BULLARD COMPANY

BRIDGEPORT 9,
CONNECTICUT

Dealers Helped by 'Sticker' Law

Price Tags on New Cars Improve Profit Picture

Price stickers have restored consumer confidence, some dealers say.

Now the car buyer has a better idea of what a car is worth.—By H. R. Neal.

▪ Put two or more automobile dealers in a room these days and their conversation will inevitably gravitate toward laws—past, present, and proposed.

The annual convention of the National Automobile Dealers Assn. was no exception. Prime points of interest were the price labelling law and "territorial security" legislation.

Buyer Confidence Restored — Generally, dealers are happy with the "sticker" law. It requires all new cars to carry a label listing factory suggested price, who it was delivered to, and how it was transported.

Dealers feel it has restored some of the buyer confidence lost in recent years through exposure of the practice of "price packing"—the art of inflating the price of a car in order to lead the customer to believe he is getting a large discount or a whopping big trade-in price for his old car.

Profits Improved — As well as taking a large share of distrust out of the traditional horse-trading between salesman and customer, it has actually helped improve the profit picture, according to a number of dealers.

Dealers say they are making more profitable deals because customers have a better idea of what a new car is actually "worth" and how much of a discount or trade-in they on the same date in 1958.

Credit Is Due—Just how much of the improved profit picture is due to the "sticker" law, and how much is due to a general sales resurgence this year (with more customers willing to buy) isn't clear. But dealers are willing to attribute part of the boost to the stickers.

Automobile dealers have been feeling a profit pinch for a number of years now. On Jan. 1, 1959, there were about 35,744 auto dealers handling U. S. makes of passenger cars, according to an estimate by Automotive News, industry trade paper. This is 1846 fewer dealers than were in business on the same date in 1958.

Mortality Rate High—The trade publication pointed out this means an average of 36 dealerships went under each week last year, or six each working day, without being replaced.

It also noted the number of dealerships has been declining steadily, with the exception of one year, since 1951 when there were 47,543 dealers handling U. S. makes.

Territorial Rights—But a prime topic of conversation and controversy was "territorial security"

Shake-Out Test for New Oldsmobile

SPARE NO MOTION: A 1959 Oldsmobile perched on machine is shaken unmercifully to test its resistance to road vibration. Instrument on table graphically records performance of all parts being tested.

—rights to sales of a particular make in a specified area. About 10 yrs ago the U. S. Supreme Court slapped down territory security provisions between Big Three automakers and their dealers.

NADA leadership is now stumping hard for reinstatement of the principle of territory security. It is readying a bill for introduction to Congress this spring which would permit such agreements between manufacturers and their dealers, IF—

Key Word — And it's the "if" that adds confusion to the picture. Not all of the dealers are in favor of territory security. In fact, NADA isn't too sure of how much backing it has among the dealer body. Consequently, it is taking a poll of all of its members to determine how many favor it and how many are opposed to it.

If the majority favor it, as does the leadership, the association will push for passage of a law which would permit the parceling out of territory.

Buyer Will Pay — One way or another, it could cost car buyers money. Basically, the controversy arises over the widespread practice of "cross-selling"—selling a car to a customer from an area not normally serviced by the selling agent.

All of the automakers allow dealers a certain amount of money for make-ready and service expenses. With Chevrolet, for example, it's around $40. But a dealer who doesn't expect to see the car return to his service department again might skimp on checking and preparing the car for customer delivery.

But Who's Responsible?—In this way, he might be able to cut the price $30 or so, to make the sale, but eventually giving the customer far greater expense and grief — which the customer promptly lays at the doorstep of the manufacturer or his local dealer.

Customers buying cars in one area often expect their local dealer to take care of the servicing and problems arising during the warrantee period, and thereafter. Dealers contend that as long as the warrantee costs are actually included in the purchase price of the car they shouldn't have to take care of cars they haven't sold.

Less Freedom of Choice—Opponents of the proposal contend that any such bill would tend to restrict the customers' freedom of choice in seeking the best price for new cars.

Details of the proposed bill haven't been spelled out, and may never be if enough dealers don't support the principle in NADA's poll. But presumably the bill wouldn't forbid a dealer from selling to an "outside" buyer, but would penalize him for the sale.

Wet Blanket Salesmanship — Some suggestions in the past have mentioned cash payment penalties amounting to $50 to $100, to the dealer in the territory where the buyer originated by the selling dealer.

But proceeding on the premise that buyers purchase their new car some place other than at their local dealership because they can get a more favorable price, the added penalty the dealer would have to pay in order to close the deal could easily dampen his desire to make the sale. If that becomes the case, then the customer ends up paying a higher price for his new car.

However, any restrictions on where people can buy a car could work hardships on the individual. Persons living in the suburbs, but working in cities, often have repairs and servicing done in the city while they are at work.

Automotive Production

WEEK ENDING	CARS	TRUCKS
Feb. 14, 1959	115,770	25,062
Feb. 7, 1959	114,282	24,765
Feb. 15, 1958	101,656	18,709
Feb. 8, 1958	109,028	19,481
TO DATE 1959	775,819	147,895
TO DATE 1958	700,041	119,992

*Preliminary Source: Ward's Reports

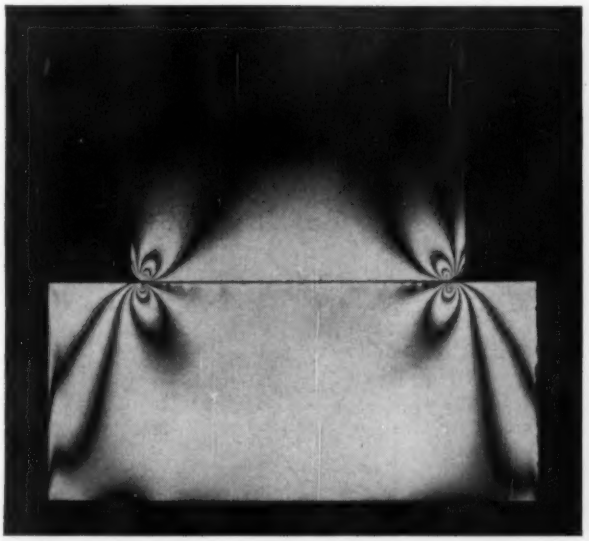
The Bull of the Woods

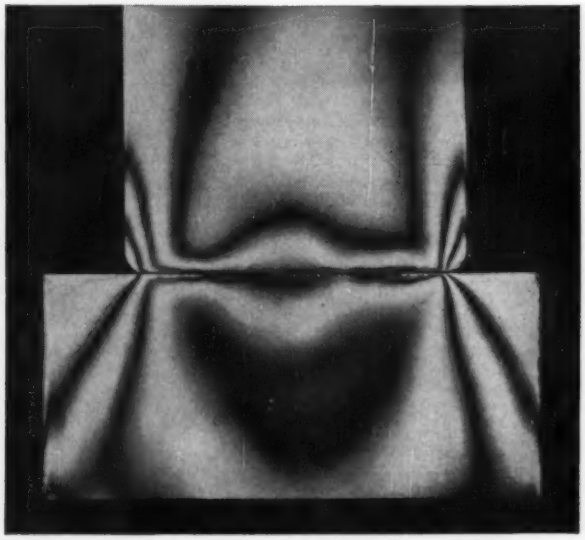
THE ONLY THING IN MODERN MACHINERY TH' BULL O' TH' WOODS WON'T TAKE TO IS A WRIST WATCH-- HE THINKS THEY'RE GIRLISH!
HE'S GOT THAT GUY SELF-CONSCIOUS ABOUT IT--HE AIN'T GOT HIS WRIST WATCH ON BUT IS SUBCONSCIOUSLY HIDIN' IT!
THE BIG INFLUENCE
T. M. REG. U. S. PAT. OFF. COPR. BY NEA SERVICE, INC.

One in a series of technical reports by Bower

BEARING BRIEFINGS

ROLLER BEARING LIFE AND CAPACITY LINKED TO STRESS DISTRIBUTION





These reproductions of photoelastic studies contain important evidence for every engineer and designer concerned with the performance and selection of roller bearings. In these photographs, the alternate dark and light areas, called fringes, indicate not only the magnitude of stress but also the stress distribution. The photographs were taken by Bower Research Engineers during a study of stress distribution in roller bearings.

The subjects represent rollers and raceways of two roller bearings under identical loads. The illustration at the left shows a roller of conventional design. The illustration at the right shows a Bower "Profiled" roller. That is, the roller is precision ground with a large radius generated along the body of the roller—a predetermined and controlled distance from each end.

The conventional roller photo (left) clearly shows how, under load, stress concentration builds up in and near the roller ends. This is called edge-loading. Such areas of concentrated stress are the breeding grounds for metal fatigue and eventual bearing failure.

In the photo of the "Profiled" roller (right) stress lines can be seen uniformly distributed across the whole length of the roller and raceway. There are no points of excessive stress concentration, consequently no starting points for early fatigue. Such a "Profiled" roller exhibits a great advantage in improved load carrying capacity, a most important bearing requirement.

Under actual operating conditions, Bower "Profiled" roller bearings show a considerably longer life at higher speeds and under greater loads than conventional roller bearings.

Because of this, and of other Bower features to be discussed in later technical reports, we suggest that you consider the advantages of Bower bearings in satisfying your future bearing requirements.

★ ★ ★ ★

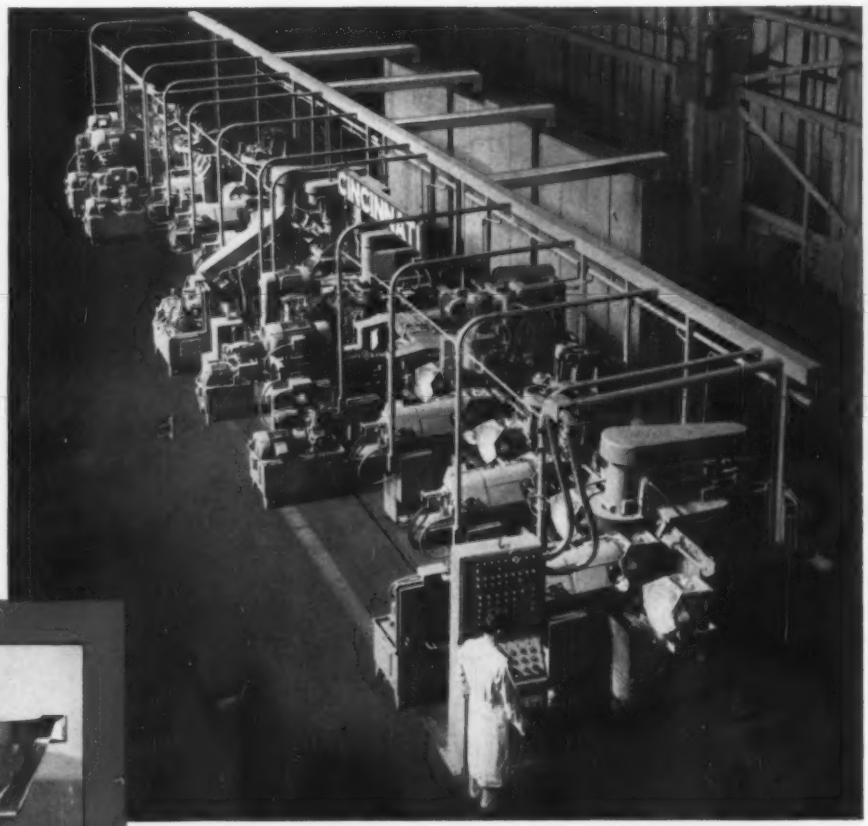
Bower engineers are always available, should you desire assistance or advice on bearing problems. Where product design calls for tapered roller bearings or journal roller assemblies, Bower makes these also in a full range of types and sizes.

BOWER ROLLER BEARINGS

BOWER ROLLER BEARING DIVISION — FEDERAL-MOGUL-BOWER BEARINGS, INC., DETROIT 14, MICHIGAN

Cincinnati 26-Station Unit Type Transfer Line

Mills, Drills, Bores . . . Ford Automatic Transmission Cases



At Ford Motor Company's new plant in Sharonville, Ohio, automatic transmission cases are automatically bored, milled and drilled in 33 machining operations. Accuracy and finish are excellent. The machine cycles 137 times per hour.

Inside the transmission case. Hard-to-reach surfaces are easily machined on

Transmission cases require gentle handling; firm, balanced clamping; experienced machining. All these requirements are incorporated in the CINCINNATI 26-Station Unit Type Transfer Line illustrated above. This production line mills, drills and bores Ford automatic transmission cases; inserts two bushings; automatically banks excess parts; transfers the casting from one station to the next. Several outstanding advantages are incorporated in this line, including unit construction and complete static electrical control. ¶Cincinnati builds special machine tools and complete production lines varying in complexity from small bearing-shell broaching machines to giant production lines performing a multitude of operations. Make Cincinnati your first choice for equipment of this type. Our Automation Specialists are ready to serve you.

SPECIAL MACHINE DIVISION
The Cincinnati Milling Machine Co.
Cincinnati 9, Ohio

CINCINNATI®

SPECIAL MACHINES • VERTICAL AND HORIZONTAL
BROACHING MACHINES • COMPLETE PRODUCTION LINES

Are Interest Rates Low Enough?

FRB Chairman Martin Says "Yes", Opposes Drop

It stacks up as a battle between hard and soft money advocates.

It looks like the head of the Federal Reserve and the hard money side has the edge.—By G. H. Baker.

▪ Lower interest rates may not come soon, as expected. Reason: Federal Reserve Board Chairman Martin is opposed. He says they're low enough, already.

Martin, a hard-money man, is having a tough time with congressional critics, union officials, and others favoring cheap money. He insists inflation is still the nation's biggest economic headache. Therefore, he reasons, there can be no softening of interest rates until inflation slows.

Inflation Straight Ahead—Right now, he sees few—if any—signs that inflationary pressures are wilting. Instead, there are uneasy signs that more not less inflation lies ahead.

Among the signs Martin sees pointing toward more inflation:

Upward price and cost pressures, both in industry and in consumer goods.

The clear threat of still higher labor costs, now being raised by Dave McDonald and the AFL-CIO United Steelworkers, and other unions.

The public's growing realization that inflation is becoming a permanent fixture in our economy.

Interest rates may yet be pegged down in the weeks ahead, but this will be made over Martin's vigorous protests. Greatest pressure for cheap money comes from Democrats in Congress.

Tell Justice First

Controversial premerger notification legislation has cleared its first hurdle this year. It has the support of the antimonopoly subcommittee of the Senate Judiciary Committee.

The measure, along with another bill to strengthen the Federal Trade Commission's enforcement powers, are the first antitrust measures to show signs of life this year.

On the Verge of a Merge—As approved by the subcommittee, the premerger measure would require companies to notify the Justice Department 60 days before a merger. This would apply to concerns with combined capital, surplus and undivided profits of more than $10 million.

In the FTC bill, the Commission could issue final cease and desist orders in Clayton Act antitrust cases and immediately ask the Justice Department to enforce them through civil actions.

Is "Control" Still a Dirty Word?

Economists Change Horses—Congress wonders if industry's opposition to federal price, wage and profit controls is crumbling. Surprisingly large number of economists now say they favor such controls.

The Senate - House Economic Committee recently questioned (by mail) 1500 economists in the nation's colleges and universities. Of these, 615 replied.

The returns:

47.7 pct favor federal control over business investments.

44.1 pct favor federal control of prices.

43.3 pct favor federal control of wages.

These responses are being examined with great care by policy leaders for both parties. They reason if these economists are "representative" of current management thinking, then the nation is much closer to a completely "planned economy" than most Congressmen have calculated.

Favor More Power—About 93 pct of the economists answering said the Federal Reserve Board ought to have power to clamp on consumer credit controls without having to ask Congress about it.

In the auto industry, for example, this would mean new cars must be paid for in as little as 18 months. This would greatly deflate the market for new car sales.

Lean to Executive — But that such a large percentage of economists share this view disturbs many congressmen. It makes a trend toward federal rule by executive order, rather than legislative process.

On whether the White House should hold the power to clamp on standby controls over prices, wages, and profits, 67.2 pct said yes, 30.4 pct said no, and 2.4 pct said nothing.

Now! Porter goes basic! The first in the south, this new basic refractories plant at Pascagoula goes "on stream" **during February**

Porter's new $12 million Pascagoula Works is a sea-water periclase and basic brick facility using the finest in modern equipment in a fully integrated production unit.

Southern industry will soon begin benefiting from faster deliveries and lower freight rates on all forms of basic refractories from H. K. Porter's new Pascagoula Works on the Gulf Coast. Inland waterways, too, will allow easy access to America's industrial heartland.

Products of this new works—Porter's 15th refractories plant—will include burned, chemically bonded, plated and plain brick, mortars, castables, plastics and ramming mixes of chrome and periclase compositions. A unique double-burning process employed in producing Porter periclase grain insures basic refractory products of the highest quality.

Annual output of this new plant indicates an ample, dependable source of supply. Equally important, Porter engineers and ceramists provide the complete customer service that is rapidly becoming recognized as a Porter principle.

For information on shipments, prices, or *any* refractories problem, write *Pascagoula Works, Refractories Division, H. K. Porter Company, Inc., Porter Building, Pittsburgh 19, Pa.*

PORTER BASIC REFRACTORY PRODUCTS

BASIC REFRACTORY BRICK

(burned and chemically bonded in both metal clad and plain categories)

CM-30	Chrome Magnesite
CM-40	Chrome Magnesite (Roof Brick)
MC-70	Magnesite Chrome
Kilmag	Magnesite Chrome (for rotary kilns, offered in burned and plated only)
M-90	Periclase

BASIC REFRACTORY SPECIALTIES

Kromtite	Chrome Air-Set Mortar
Plastikrom	Plastic Chrome Ore
Kromor	Ground Chrome Ore
Kromform	Chrome Castable
Subhearth Kromform	Chrome Castable
Airkrom-C	Coarse Chrome Gun Mix
Airkrom-F	Fine Chrome Gun Mix
Magnaram 85	Periclase Ramming Mix, 85% MgO
Magnaram 95	Periclase Ramming Mix, 95% MgO
Peritite	Periclase Air-Set Mortar

REFRACTORIES DIVISION PORTER **H.K. PORTER COMPANY, INC.**

DIVISIONS: Connors Steel, Delta-Star Electric, Disston, Forge & Fittings, Leschen Wire Rope, Riverside-Alloy Metal, Thermoid, Vulcan-Kidd Steel, H. K. Porter Company (Canada) Ltd.

Coast to Coast in Only an Hour

That's Prospect Jet Builders Hold Out for 1970's

Cross-country jet travel in under five hours is only a recent advance.

But planemakers say they now have the know-how for supersonic jetliners. The hitch: High costs.—By R. R. Kay.

▪ Jet airliner travel from New York to California in a little more than an hour? It sounds fantastic, but it's on the way.

Almost every major planemaker in the Farwest is planning a supersonic jetliner. Target date for these 2000-mph transports: The early 1970's.

Boeing's 707 jetliner just started passenger service last month. Douglas' DC-8 won't be in service until next fall. And for most Americans today's jet flying time, California to New York in 4½ hr, still seems impressive.

Planning's Easy — Yet Convair, Douglas, Boeing, and Lockheed talk quite openly about the supersonic airliner. Only North American is secretive about specifics.

The best aeronautical minds in the industry say the needed know-how is ready. No new breakthroughs are necessary.

. . . But Financing Isn't—What's holding back the supersonic transport? Money.

Present estimates are that the first planes would cost about $20 million each. That compares with about $5 million for the 707 or DC-8.

Douglas and Boeing already have about $½ billion invested in their present jetliners.

March Metals Show

Los Angeles expects record crowds for the 11th Western Metal Exposition and Congress. Dates: March 16-20.

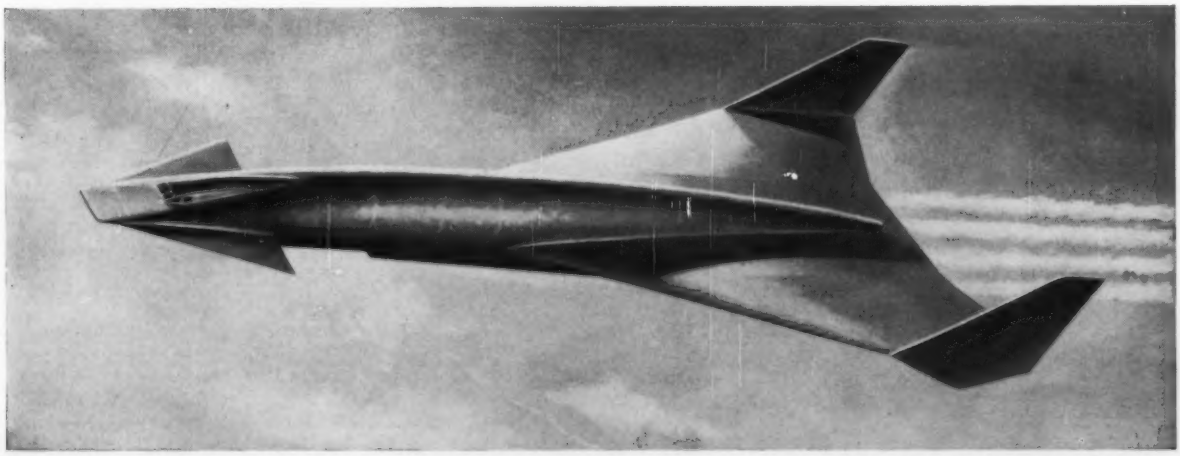
The American Society for Metals has prepared an interesting program. Metalworkers from all over the country will be there to talk about cutting costs, improving quality, and stepping up production. More than 350 national and western firms will show their latest equipment.

Price-Fix Charges

A Federal Grand Jury will soon hear charges of price-fixing in the steel industry on the West Coast.

What's it all about? The Antitrust Div. of the U. S. Dept. of Justice says it's worried about charges major steel companies are discriminating against independent fabricators in favor of their own fabricating divisions.

About 20 or 30 subpoenas will go out. The big three, Columbia-Geneva Div. of U. S. Steel, Bethlehem Pacific Steel, and Kaiser Steel are pretty sure to receive invitations. Best guess is that the probe will last six months.



MACH 3 TO MACH 5: Cruising speeds of three to five times the speed of sound are predicted for 1970 jetliners. They may look like this preliminary design developed by Convair in studies on supersonics.

He's been working on the railroad . . .

the TRS rivet man found a $7000 saving in A. C. Gilbert's train transformers

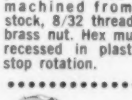
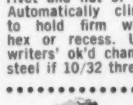
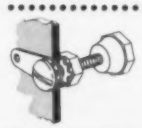
You needn't be rich to give your boy a fine American Flyer train because Gilbert never misses a possibility for reducing costs.

For example, they challenged a TRS sales engineer to find ways to save on transformer assemblies. He uncovered *two* . . . worth $7000 on a year's production.

Invite the TRS man to check over your assemblies. You'll find that he is more than a salesman . . . that he has the viewpoint of a manufacturing engineer. Chances are he can contribute practical ideas for making your assemblies simpler, faster, better.

Of course he sells rivets. And he can give you sensible reasons why TRS Tubular Rivets are more reliable in essential qualities and uniformity. Ask to see the TRS Quality Control Album . . . one significant result of a five-year modernization of this pioneer company. Modernization of people, policies, production and service facilities. *You'll like to do business with the new TRS . . . we'll make sure of it.*

SEE WHAT THE TRS MAN FOUND

OLD	NEW
	
Found: Contact fastener and binding post. Expensive brass stud machined from hex stock, 8/32 thread, and brass nut. Hex must be recessed in plastic to stop rotation.	**Suggested:** Low-cost 10/32 threaded collar rivet and nut of steel. Automatically clinched to hold firm without hex or recess. Underwriters' ok'd change to steel if 10/32 thread.
	
Found: Five-piece lug fastener and binding post . . . expensive 8/32 brass screw and hex lock nut, 2 lock washers, brass terminal nut.	**Suggested:** Low-cost threaded steel collar rivet and steel nut, 10/32 thread.

Don't Buy Riveting Machines until you learn how the TRS **PAR** *process revolutionizes riveting*

TRS®

TUBULAR RIVET & STUD COMPANY

QUINCY 70, MASSACHUSETTS • Midwest Office & Warehouse in Chicago. Branches: Atlanta, Buffalo, Charlotte, Cleveland, Dallas, Detroit, Hartford, Indianapolis, Los Angeles, New York City, Philadelphia, Seattle, Springfield, St. Louis. See "Yellow Pages" for phone numbers.

If it's a Tubular Rivet TRS makes it . . . and Better

Adhesive Salvages Scrap Tools

Obsolete Molds Are Cut, Bonded, and Reworked

Fabricators at Ryan Aeronautical take discarded aluminum tools, rough saw and bond them into blocks.

These blocks are then kept for machining into shape as new tools—By E. J. Egan, Jr.

▪ Alert tool and die shops might be able to latch on to some new business in the fast growing plastic molding field with this idea: Offer to rework the molder's obsolete aluminum tooling into whatever new shapes he needs.

Ryan Aeronautical Co.'s tool fabrication shop started doing this about a year ago. It takes discarded aluminum tools, rough saws these castings into block shapes, then bonds the blocks with a tough metal-to-metal adhesive.

Saved: Time and Money—When a new tooling order comes through, the shop can often fill it in a hurry just by picking an adhesive-bonded block of the right size and machining it to shape.

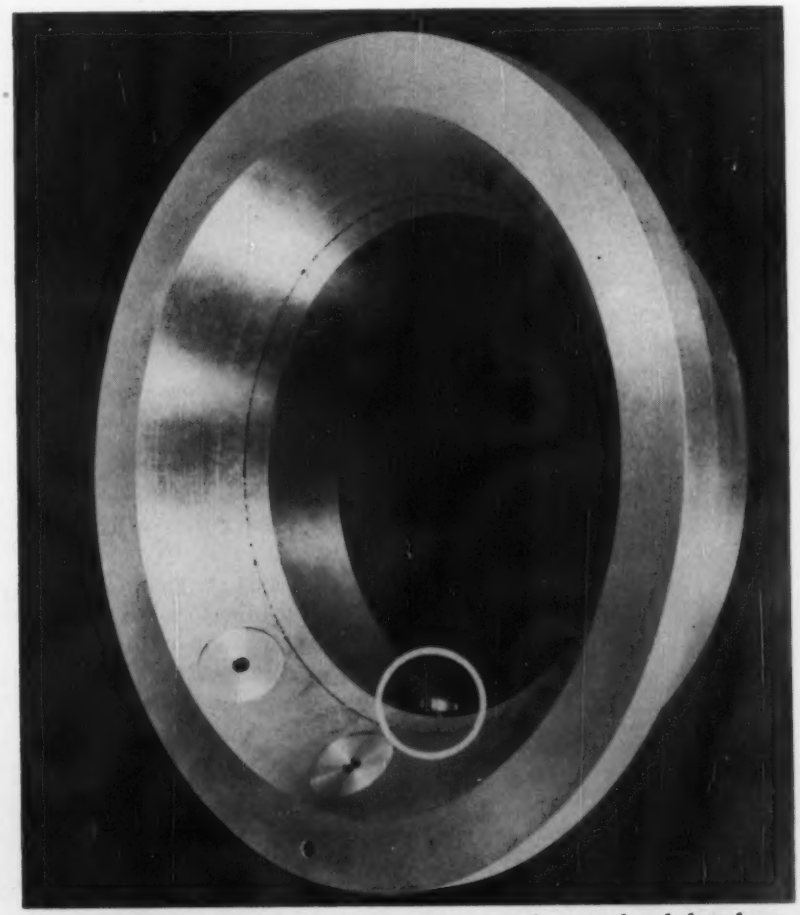
Ryan's savings with this simple but good idea are certainly nothing to sneeze at—upwards of $20,000 annually. Part of it comes from money that doesn't have to be spent for new castings. Another big chunk is represented by the time that's saved.

How It Started—How did the idea develop? "We needed a 4-ft long male mold in a hurry to make some fiberglass shells for wingtip radomes," explains industrial engineer Ted Grabowsky. "But we couldn't get delivery of the cast aluminum tooling in less than six weeks. On top of that, the castings and patterns would cost about $600."

That's when Ryan engineers thought of building up the tooling mold in much the same way a patternmaker glues up wooden blocks. Only they tried it with scrap pieces of cast aluminum tooling and Metlbond 4041 adhesive made by Narmco Resins & Coatings Co., Costa Mesa, Calif.

The idea clicked. Within 10 days Ryan had a workable mold and had turned out the first of the new radomes.

Togetherness — Any chance of the adhesive bond coming apart when the built-up blocks are being machined? "We've taken a lot of rough, fast cuts on these laminated blocks of tooling stock," Mr. Grabowsky says, "but we've never torn a bond apart." Total time required to clean, prime, bond and cure a built-up tool is only a little over two hours.



WAY TO SAVE: Two discarded aluminum tools were bonded and machined to make this new ring-shaped tool. Note firm adhesive-bond line.

INDUSTRIAL BRIEFS

Turns Green—A. P. Green Fire Brick Co., Mexico, Mo., has acquired Climax Fire Brick Co., Climax, Pa., through an exchange of stock. Climax and Green are makers of refractories, materials used to contain and control heat. It is expected Climax sales will add 2.5 pct to sales of the acquiring firm.

Tantalum for Sale—National Research Corp., Cambridge, Mass., has formed a metals division to produce and market tantalum and other rare metals and related chemicals. The company's present plant has a capacity of 30,000 lbs annually and includes equipment for primary metal production and facilities for large ingot and alloy melting.

Plan Ahead—A tract of ground near Weirton, W. Va., has been purchased by National Steel for future erection of two new buildings. The structures will be the National Steel Corp. Research Center and the other, a new general office building for the Weirton Steel Co.

Iron Cantonese—Penn Machine Co., Johnstown, Pa., acquired the Canton Malleable Iron Co., Canton, O. Purchase price is believed to have been in excess of a million dollars. Also acquired in the transaction is a wholly-owned subsidiary, Canton Mfg. Co., which acts as sales agent for specialty items of the parent ocmpany.

"Gentlemen, what we lack is company spirit."

Buying Back Stock—Foote Bros. Gear & Machine Corp., Chicago, has entered into an agreement, subject to approval of its stockholders, to purchase for cash substantially all outstanding capital stock of Whitney Chain Co., Hartford, Conn. Whitney Chain manufacturers roller and other types of chain and sprockets and devices used in industrial power transmission.

Cutting Tool Service—A new customer service has been added by the Cutting Tool Div., Brown & Sharpe Mfg. Co., Providence, R. I. The Brown & Sharpe Cutter Service Co. of New Jersey is located at 590 Grand Ave., Ridgefield, N. J.

Falls Pilot—The Carborundum Co. will build a new $3¼ million Pilot plant for its Research and Development Div. in Niagara Falls. This plant will be operated by the New Products Branch of the Research and Development Div. D. G. Sturges is manager of the Branch.

Joining Forces—The Berry Steel Corp., Ardmore Products, Inc., and The Kenilworth Steel Co. have consolidated their plants and offices in one location. New address will be Aldene & First Ave., Roselle, N. J.

Yuba Field Force—Yuba Consolidated Industries, Inc., has added a new division to be known as Yuba Consolidated Erectors, Inc. This division will perform on a national basis all field erection work for Yuba's heavy steel fabricating divisions. Headquarters are located at 351 California St., San Francisco.

Metal and Glass — The Metal Glass Products Co. became a subsidiary of Barler Metal Products, Inc., Goshen, Ind. Officers are: M. E. Miller, president; G. H. Dovenmuehle, Jr., vice president; R. W. Kintigh, vice president; F. A. Kummeth, secretary-treasurer. The Hart Metal Products truck and trailer parts and accessories lines, together with its fabrication and engineering services, have been acquired.

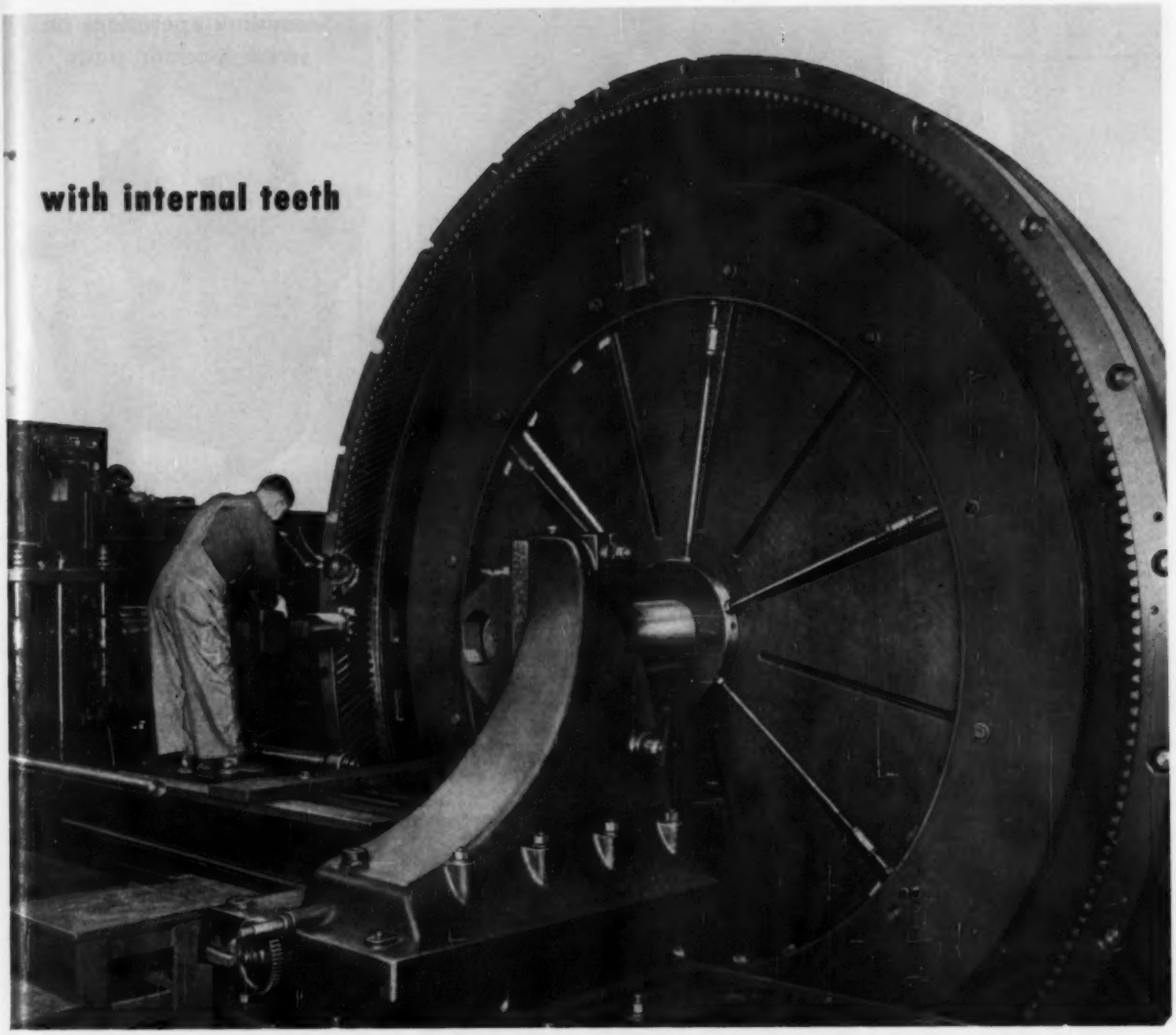
Early Planting — Deliveries of structural steel for a new Chicago suburb plant facility being built for the Calumet Steel Div. of Borg-Warner Corp., will begin this month. The new building, located on Joe Orr Rd., Chicago Heights, Ill., will house Calumet's electric melt shop. Completion is scheduled for mid-1959.

Head Cutters—The Cutting Tool Manufacturers Assn. at its annual meeting elected George N. Popham, Gorham Tool Co., president. Kenneth R. Beardslee, Metallurgical Products Div., General Electric Co., elected vice president.

Cast of Thousands—The Atomic Energy Commission announces availability, for loan or sale, of 45 technical films used in Geneva at the international conference on the Peaceful Uses of Atomic Energy. The 16 mm films, cover major nuclear applications and research activities. Additional information from AEC, Washington 25, D. C.

To "Steel" the Show—The Aircraft Castings Assn., a non-profit corporation, has been formed by a group of leading steel foundries. It will promote the increased use of ferrous castings for the aircraft, missile and related industries. The Association is chartered in California, with headquarters in Los Angeles.

Valve and Meter Bulletin—Edward Valves, Inc., and Republic Flow Meters Co., both subsidiaries of Rockwell Mfg. Co., have consolidated their offices with other Rockwell offices at 1495 Northside Drive N. W., Atlanta. Both companies will serve the process and utility industries in Georgia, S. Carolina, Florida and southeast Mississippi.



When designs include

GIANT INDUSTRIAL GEARS

Specify Farrel for accuracy, high quality and fine workmanship.

For 35 years the company's Buffalo plant has specialized in the production of large gears for various industrial uses. Here eight of the world's largest gear generators are kept in regular use. The precision inherent in the operating principle of these Farrel-Sykes machines provides accurate tooth spacing, profile and helix angle.

Farrel internal gears are available with single helical or spur teeth in sizes up to 23′ 0″ external blank diameter, 20″ face, ¾ DP. Farrel's continuous-tooth herringbone gears come in any size up to 23′ 0″ diameter, 60″ face, ¾ DP.

Ask for details of large industrial gears to meet your specific requirements.

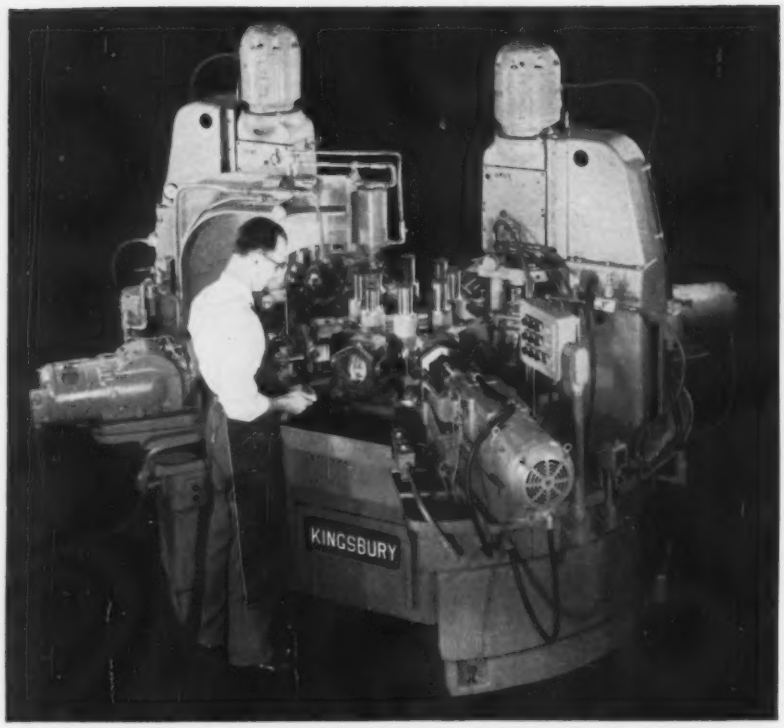
FARREL-BIRMINGHAM COMPANY, INC.

ANSONIA, CONNECTICUT

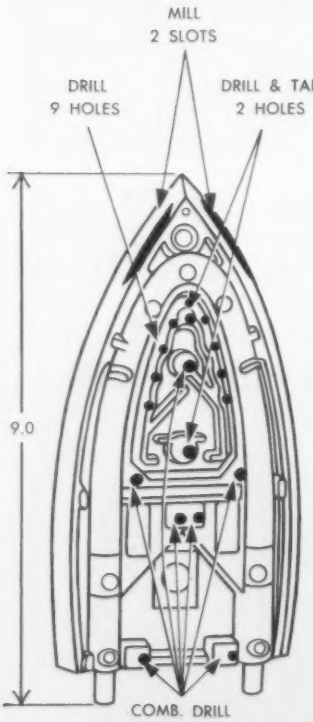
Plants: Ansonia and Derby, Conn., Buffalo and Rochester, N. Y. • *Sales Offices:* Ansonia, Buffalo, Boston, Akron, Ann Arbor (Mich.), Chicago, Minneapolis, Los Angeles, Salt Lake City, Tulsa, Houston, Fayetteville (N.C.) • *European Office:* Piazza della Republica 32, Milano, Italy

Farrel-Birmingham®

FB-1158



22-spindle Kingsbury mills 2 slots, drills 18 holes, taps



DIE CAST ALUMINUM FLAT IRON SOLE PLATE

Five horizontal and two vertical units operate 22 tools. The vertical units mill the slots with six-inch cutters. Each cutter rotates so the thrust is down. The slots, incidentally, make it easier to iron around buttons.

Four horizontal units drill 11 holes and combination drill and countersink 7 holes. Bushings guide these tools. The last unit taps two of the holes.

A 30-inch index table holds eight work fixtures. Each has power clamping and automatic unclamping through use of an air cylinder. The point of the work is up, and clamping is outward against a fixed front plate. Gross production is 520 parts per hour.

Production men praise our machines. "Can't remember when we had trouble with them."

"Our Kingsburys do a nice job for us."

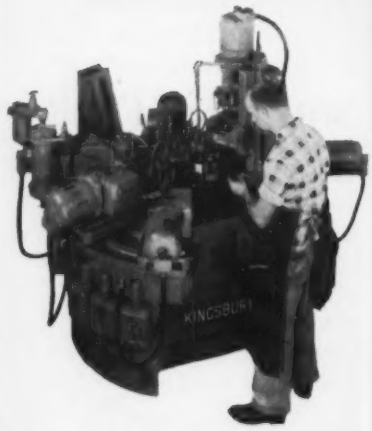
"Hardly ever get a bad part."

We think we earn those compliments. Forty years behind us and we still work hard on every machine we build. Good basic design, rugged construction, test runs before shipment — all that sort of thing really pays off.

For high production at low unit cost, ask to have a representative call and talk over your jobs. Let him get you a specific proposal. If we say we can do it, we can do it. Kingsbury Machine Tool Corp., Keene, N. H.

KINGSBURY MULTI-UNIT AUTOMATICS

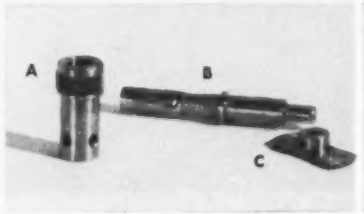
Secondary operations on screw machine parts



This 7-spindle Kingsbury operates on three parts for electric typewriters. It drills, chamfers, taps and burr reams 430 parts per hour (gross).

A 12-inch index table holds eight work fixtures with automatic clamping, unclamping and ejection. Different jaws and work locators are used for the three parts.

Part **A** uses all seven units. Six horizontal units operate on two cross holes 90° apart. A vertical unit burr reams the center hole. Parts **B** and **C** each use only three units.



Typical Kingsbury jobs in eight industries

These parts are used in a food mixer, water meter, automatic transmission, dial telephone, plumbing, air conditioner, rifle, and typewriter. All cost less on Kingsburys.

C. J. Demrick, named president, Amplex Div., Chrysler Corp.

H. M. Banta, appointed asst. director, research and technology, National Tube Div., U. S. Steel Corp., Pittsburgh.

R. J. Russell, appointed executive vice president, Hardinge Co., Inc.

J. P. Gantley, vice president, will head the new Nuclear Products Div., The Fenn Mfg. Co., Newington, Conn.; **A. T. Scattergood,** vice president, will supervise field contact and engineering.

Joel Hunter, named to the board of directors, Allis-Chalmers Mfg. Co., Milwaukee, Wis.; **B. E. Smith,** elected a vice president.

Joseph LaBarbera, named vice president, manufacturing, The J. B. Beaird Co., Inc., Shreveport, La.

W. L. Kurz, elected secretary, The W. W. Sly Mfg. Co.

D. R. Branaka, appointed general sales manager, The Sinclair-Collins Valve Co. and Valvair Corp., divisions of International Basic Economy Corp.

M. R. Wilson, appointed general manager, Pennsylvania Lawn Mower Div., Exeter, Pa., American Chain & Cable Co., Inc.

G. H. Greene, named general manager, Bethlehem Steel Co.'s Johnstown, Pa., plant.

C. L. Warwick, Jr., appointed assistant to general manager, production activities, Page Steel & Wire Div., American Chain & Cable Co., Inc., Monessen, Pa.

W. J. Anderson, appointed regional sales manager, Macwhyte Wire Rope Co., Kenosha, Wis.

A. J. Booth, appointed plant manager, Bridgeport, Conn., plant, Stewart Die Casting Div., Stewart-Warner Corp.; **J. C. Bell,** promoted to superintendent, production and engineering.

F. J. MacRae, named manager, Plastics Technical Service, The Dow Chemical Co.; **Dr W. C. Goggin,** is manager, Dow Plastics Dept.; **C. B. Branch,** named manager, overseas activities.

D. L. Brewster, named general manager, sales, Inland Steel Co., Chicago.

C. F. McKenna, Jr., elected president, Johnson & Hoffman Mfg. Co., Mineola, L. I., N. Y., subsidiary of Superior Tube Co., Norristown, Pa.

L. W. Long, appointed administration manager, Sales Div., Mallory-Sharon Metals Corp., Niles, O.

Irving Lipkowitz, named director, economic affairs, Reynolds Metals Co., Richmond, Va.

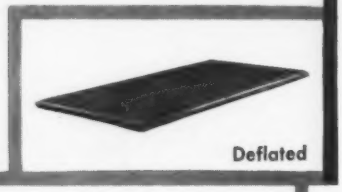
E. V. Dowden, named works manager, Electric Controller & Mfg. Div., Square D. Co., Cleveland.

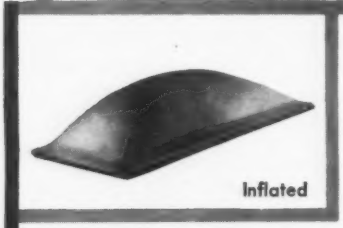
W. C. Erwin, named purchasing agent, production purchasing section, Purchasing Dept. of Pesco

A. M. Norman, named controller and asst. treasurer, L. B. Foster Co., Pittsburgh.

PneuBin

ELIMINATES FLOW STOPPAGE IN BINS AND HOPPERS





THE PROBLEM OF BRIDGING ... ARCHING ... FUNNELING SOLVED ONCE AND FOREVER!

PneuBin is a complete, quiet system, designed to produce flow by positive displacement of stubborn materials in storage bins and hoppers. Not a vibrator . . . not an aeration device . . . but steel-backed neoprene, pulsating panels, and controls that can easily be installed in your present bins and hoppers. Each installation is individually engineered to guarantee the correct panel combination to solve the flow stoppage problem.

Send for "Flow Stoppage Report" and FREE literature.

PneuBin

A PRODUCT OF
GEROTOR MAY CORPORATION
COCKEYSVILLE, MARYLAND

Products Div., Borg-Warner Corp., Bedford, O.; **G. T. Weidinger,** will head the non-production purchasing section.

J. F. Beckman, elected asst. vice president, Signode Steel Strapping Co.

J. E. Muller, appointed Spokane, Wash., branch manager, Kaiser Aluminum & Chemical Sales, Inc.

C. D. McCarra, promoted to district manager, Chase Brass & Copper Co. warehouse and office in Dallas, Tex.

F. C. Hohenstein, named Chicago district manager, Elliott Co., Jeannette, Pa.; **W. E. Widau,** named midwestern regional manager.

K. H. Griffith, appointed assistant manager, credits, Jones & Laughlin Steel Corp., Stainless and Strip Div., Detroit.

M. C. Carlson, elected asst. vice president, Signode Steel Strapping Co.

K. K. Reid, appointed assistant to the manager, sheet and plate sales, Aluminum Co. of America, Pittsburgh.

J. H. Miller, appointed general plant engineer, Heppenstall Co., Pittsburgh.

J. V. S. Norton, named assistant sales manager, eastern region, Bucyrus-Erie Co., S. Milwaukee, Wis.

H. P. Young, elected asst. vice president, Signode Steel Strapping Co.

J. E. Newlin, Jr., appointed general manager, sales service, The Carpenter Steel Co., Reading, Pa.

Dr. Ellis Abrams and **P. J. Welsh,** promoted to assistant managers, research, E. F. Houghton & Co., Philadelphia.

The Connors Steel Div., H. K. Porter Co., Inc., have announced the following Division district sales representatives: **Thomas Jefferson,** southwestern Pennsylvania; **L. R. Hutchinson,** central West Virginia;

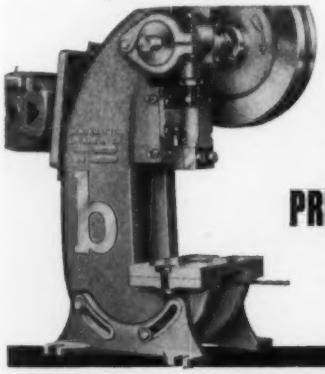
FEIN
Portable Power Hack Saw

Electrically or Pneumatically driven

The saw blade of high speed steel moves at a speed of 480 strokes per minute with a **2½" thrust.** Easily cuts any profile metal and steel or cast iron pipe up to 6" diameter. Driven by 250 Watt Universal Motor, 200 Watt 3 Phase motor or a 0.5 HP air turbine.

For further information, see your dealer or write:

VICTOR J. KRIEG, INC.
Precision-made power tools of unsurpassed performance
611 BROADWAY, NEW YORK 12, N. Y.



THERE'S A BENCHMASTER FOR EVERY PRESS OPERATION

at ratings from 2 to 10 tons!

Benchmaster gives you a series of proven presses and press designs—backed by 20 years of industrial use—with stock parts and dealers from coast to coast!

Benchmasters are the *accepted* presses — standards of the industry for all light tonnage applications.

Made in 2, 5, 8 and 10 ton capacities in Plain OBI, Back-Geared, Deep Throat, Fixed Bed Gap Frame, Multiple Ram and Half Press models with mechanical, air or electric clutches. Also available: Mechanical 2 hand trip lever or 2 hand solenoid operation for maximum safety.

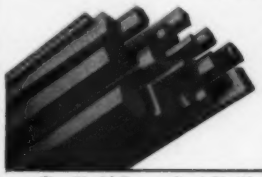
When you need a press for *any operation*, check with Benchmaster . . . *known for service, for reliability . . . for over-all press versatility, and for low cost!*

benchmaster

World's largest manufacturer of small punch presses and mills.

1835 W. Rosecrans Avenue • Gardena, California

Brass & Bronze Free-Cutting Rods



Extruded Brass Shapes

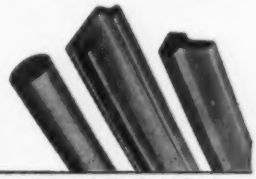
'Tru Shaft' Bronze Boat Shafting

Brass Wire

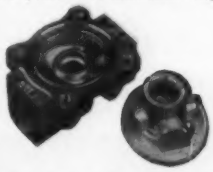
Bronze Welding Rods

Titan
quality metals

Brass & Bronze Forging Rods

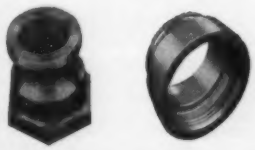


Brass, Bronze & Aluminum Forgings



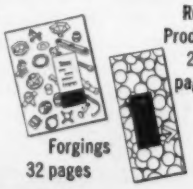
Brass Pressure Die Castings

Machined Parts



Get these 2 free booklets!

Write us on your letterhead



Rod Products 24 pages

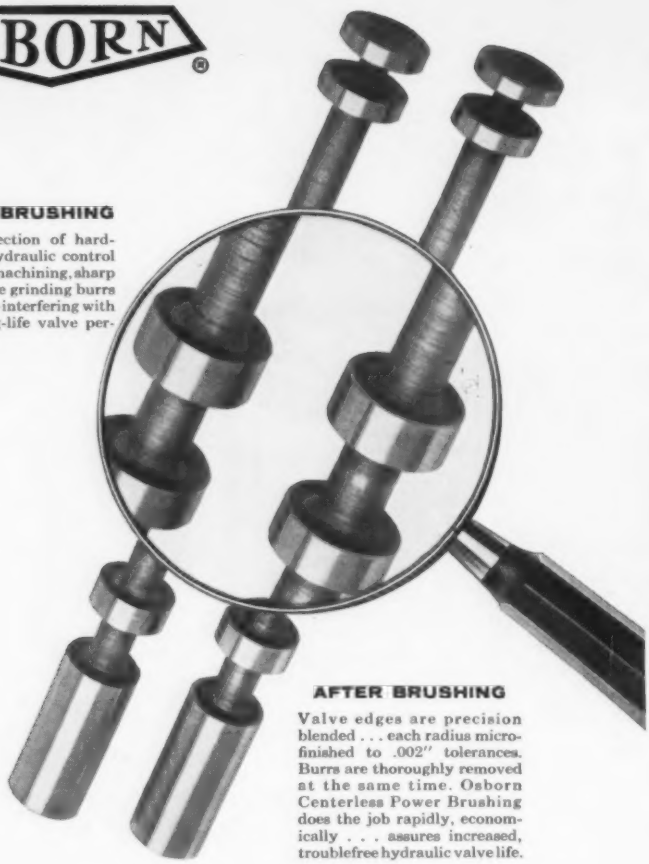
Forgings 32 pages

Titan®
METAL MANUFACTURING COMPANY

Bellefonte, Pa. Newark, Calif.

QUALITY ALLOYS BY METAL SPECIALISTS

OSBORN



BEFORE BRUSHING

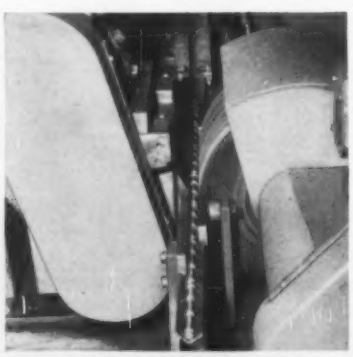
Magnified section of hardened steel hydraulic control valve. After machining, sharp edges and fine grinding burrs still remain—interfering with efficient long-life valve performance.

AFTER BRUSHING

Valve edges are precision blended . . . each radius microfinished to .002" tolerances. Burrs are thoroughly removed at the same time. Osborn Centerless Power Brushing does the job rapidly, economically . . . assures increased, troublefree hydraulic valve life.

Microfinishing valve edges to a .002" radius

. . . at rates of 1200 parts-per-hour with OSBORN Power Brushing



CENTERLESS BRUSHING SETUP precision finishes hydraulic control valves at production rates of 1200 parts-per-hour. Finish blend on valve edges can be controlled to any desired microinch tolerance. Job is done on a centerless machine—with Osborn Matic® Centerless Brushes operating at 1750 rpm.

HYDRAULIC component manufacturers today—producing parts like this control valve—require ultra-high degrees of precision finishing. And Osborn Power Brushing helps meet the demands of modern high-pressure hydraulics with quality finishing, deburring and surface blending methods for hundreds of different types of parts.

In addition to the versatility and *precise quality control* afforded by Osborn Power Brushing methods—leading manufacturers also find that finishing operations are done more rapidly . . . at significantly lower cost.

An **O**sborn **B**rushing **A**nalysis—made in your plant at no cost or obligation—can pinpoint where you can speed production . . . improve quality . . . cut costs with modern Osborn Power Brushing. Write us for full details. *The Osborn Manufacturing Company, Dept. F-78, Cleveland 14, O.*

Osborn Brushes

BRUSHING MACHINES • BRUSHING METHODS
POWER, PAINT AND MAINTENANCE BRUSHES • FOUNDRY PRODUCTION MACHINERY

Tom Dandelet, southwestern Ohio and eastern Indiana.

P. L. McManus, appointed assistant manager, Marketing Div., and Eastern regional sales manager, Worthington Corp., Harrison, N. J.; **W. M. Fine,** named manager, San Francisco district office.

R. T. Jennings, appointed truck merchandising manager, GMC Truck and Coach Div., General Motors Corp., Pontiac, Mich.

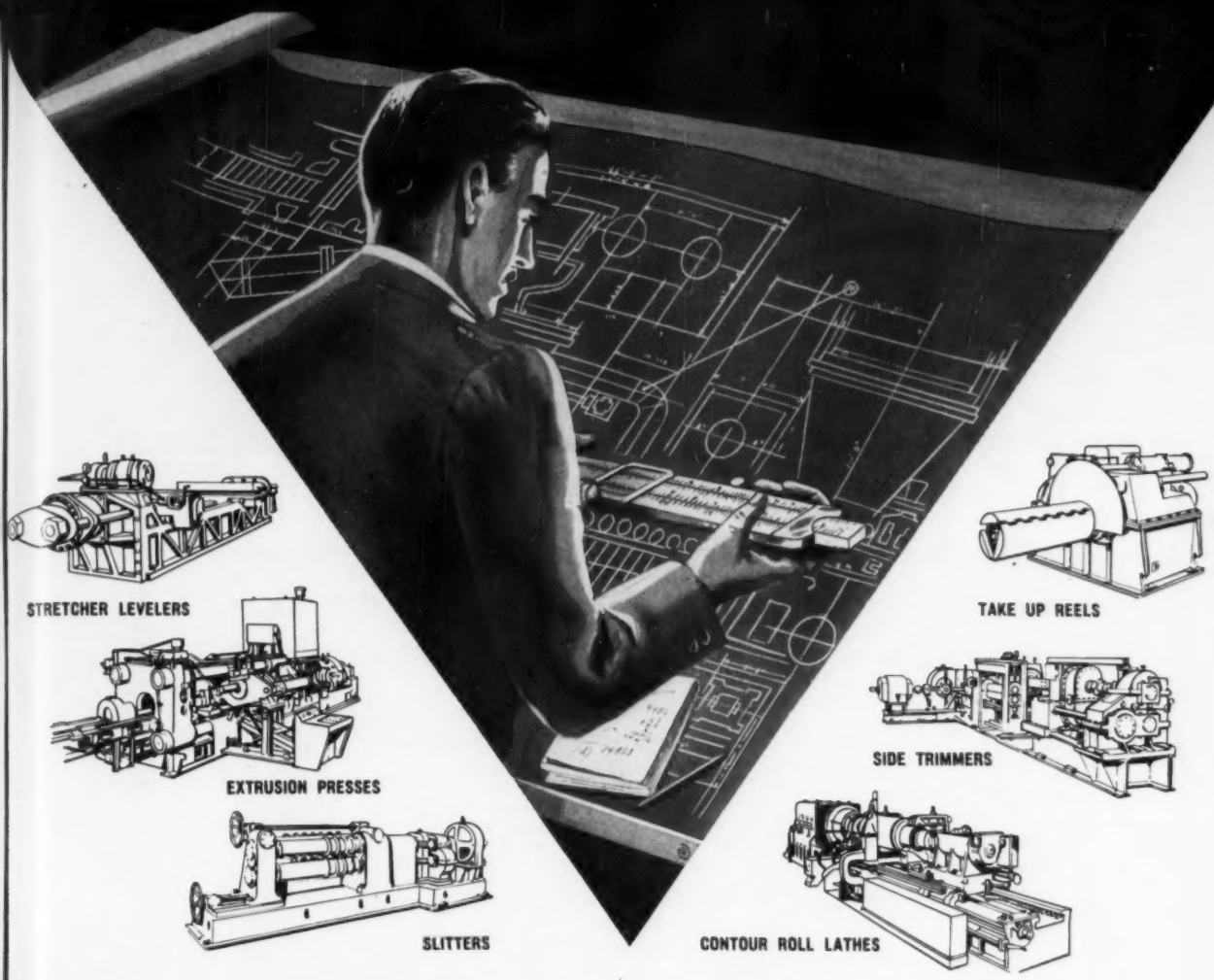
D. F. Griffin, appointed chief metallurgist, Landis Machine Co., Waynesboro, Pa.

OBITUARIES

J. E. Taylerson, 43, manager, engineering service, Linde Co., Div. of Union Carbide Corp.

M. H. McCurdy, 61, district sales manager, Baldwin-Lima-Hamilton Corp.

J. D. Zahn, 50, control officer, Metal Operations Group, Continental Can Co.



"YOUNGSTOWN" puts new emphasis on DESIGN

HOW PROGRESSIVE DESIGN ENGINEERING PAYS OFF FOR YOU IN "YF&M" MACHINERY AND EQUIPMENT

There's a new look at "YOUNGSTOWN" and it goes far beyond our new office building and the expanded facilities at our three plants. It's a look toward your future productive position, in what we design and build for you today.

Here's how we provide added assurance of the most advanced machinery and equipment . . . Our staff of competent design engineers, under highly reputable leadership, is ready to team up with your own engineers for research or to make an independent study of your problems.

As a result of progressive design ideas you will gain a long productive future with "YOUNGSTOWN" machinery and equipment. Our ¾ century of experience, in building to customers' specifications, now has added meaning. Take advantage of our increased capacity to serve you; consult us about your needs.

The Youngstown Foundry & Machine Co. Youngstown, Ohio

Serving Industry Since 1885

COMPLETE ENGINEERING • CONTRACT SERVICES • SPECIAL MACHINERY • ROLLING MILL MACHINERY

Switch, actuator, capacitor, thermostat, terminal board... all sealed-in to seal-out the biggest single cause of fractional motor failure

1. Seals out dirt, lint, insects and other matter. Ventilating air cannot contaminate these vital parts.

2. Provides complete protection against mechanical damage.

3. Sealed capacitor and terminal board assure easy, all-position mounting. Absence of externally mounted capacitor* "dog house" and conduit box permits installation anywhere and in any position.

4. Sealed, prelubricated bearings require no lubrication for the life of the motor.

5. Finally! Ball bearing motors as quiet as sleeve bearing motors.

   A. No more "book-end" bearings. New design permits far closer bearing centers.

   B. Super-honed close tolerance bearings.

   C. Magnetic noises reduced to absolute minimum by special machining and assembly processes.

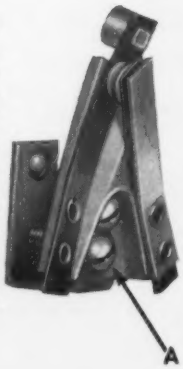
   D. Air noise practically eliminated through unique ventilation design.

6. Single-phase motors with the new *sealed capsule* are available from ⅓ to 5 hp. Included are specific designs for blowers, pumps, compressors, machine tools and material handling equipment.

**Capacitor is internally mounted on motors rated 1 hp, 3600 rpm and ¾ hp, 1800 rpm and smaller.*

Adjustable starting switch

. . . a new and exclusive feature of every A. O. Smith single-phase motor. Vital switching action no longer depends on build-up of tolerances. Switch is adjusted *after assembly* by turning the self-locking screw (A) to achieve preset clearance between switch button and actuator. Proper contact alignment and positive switching action are assured — guaranteeing maximum life for every motor. Field adjustment and/or replacement — equally easy.



Sealed Capsule Blower Motors—resilient base					
Horsepower	⅓	⅓	½	½	¾
R. P. M.	3600	1800	3600	1800	3600
Frame Size	56-1	56-1	56-1	56-2	56-2
Horsepower	¾	1	1	1½	2
R. P. M.	1800	3600	1800	3600	3600
Frame Size	56-3	56-3	56-5	56-5	56-6

Sealed Capsule General-Purpose Motors—rigid base				
Horsepower	⅓	⅓	½	½
R. P. M.	3600	1800	3600	1800
Frame Size	56-1	56-1	56-1	56-2
Horsepower	¾	¾	1	
R. P. M.	3600	1800	3600	
Frame Size	56-2	56-3	56-3	

Major break-thru in fractional hp motor design...

revolutionary new sealed capsule

Write today for all the facts about the A. O. Smith line of fractional motors — ½ to 2 hp — with Sealed Capsule design. And ask for facts about other advance-design A. O. Smith motors — ½ to 800 hp.

Through research ...a better way

A.O.Smith

CORPORATION

ELECTRIC MOTORS

Tipp City, Ohio

A. O. Smith INTERNATIONAL S. A., Milwaukee 1, Wisconsin, U.S.A.

WITH TRICHLOR . . .

columbia-southern can cut your degreasing costs!

EVERY $6,400 YOU SAVE IN DEGREASING COSTS IS WORTH A $100,000 ORDER

Pretax earnings average 6.4% or $6,400 on each $100,000 of product you sell after raw materials, sales expenses, overhead and miscellaneous are deducted.*

Every time you save $6,400 in your degreasing costs, it is the equivalent of your net on a $100,000 order.

COLUMBIA-SOUTHERN CAN CUT THESE COSTS FOR YOU

Columbia-Southern is a foremost name in degreasing knowledge and experience, product quality, cost-saving operation. Our Technical Service specialists will be glad to examine your degreasing process and recommend ways in which you can effect savings.

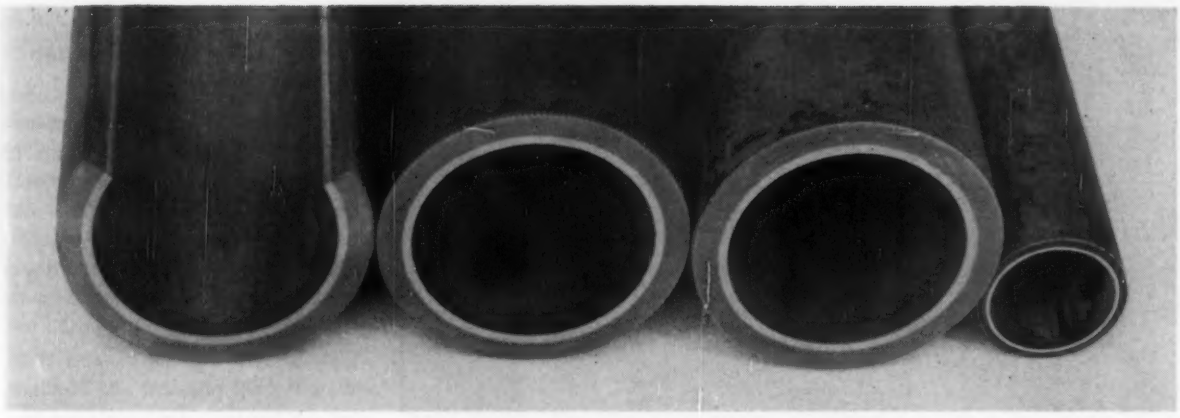
SO, WHY WAIT?

If a Columbia-Southern representative has not yet reviewed your degreasing operation, his visit in the near future will more than likely save you money. So, why wait? Write today to "Trichlor" at our Pittsburgh address.

*Based on Manufacturing Corporation Statistics for the first half of 1958.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION

Subsidiary of Pittsburgh Plate Glass Company • One Gateway Center, Pittsburgh 22, Pennsylvania



MANY USES: Composite tubing in various sizes and combinations of metals appears to have a bright future.

New Tubing Fights Corrosion

Joins Jackets and Liners With Unbreakable Molecular Bonds

By **J. B. Ulam**—Clad Metals Consultant, Allegheny Ludlum Steel Corp., Brackenridge, Pa.

Here's a potential solution for process industries plagued with heat-transfer and corrosion problems.

▪ A new product called "composite tubing" features dissimilar metals which are metallurgically bonded into an inseparable jacket-and-liner relationship.

Produced in various combinations of metals and sizes (up to 3 in. OD) by Allegheny Ludlum Steel Corp., composite tubing's brightest future appears to be in the atomic energy, chemical and petroleum industries.

Link Two Methods—The new, high-strength tube forms were developed by combining two well-known techniques: The Ulam process for cladding metals, and the Ugine-Sejournet method of hot extrusion. The result: true molecular bonding between the oxide-free surfaces of dissimilar materials, as in a carbon steel tube with a stainless steel liner for nuclear reactors.

For many years, industry's demand for special-purpose tubing has been met by duplex or bimetallic tube forms. In these products, a snug fit between a liner and a jacket is produced by drawing or shrink-fitting.

In such tubing, however, the liner and jacket sometimes tend to separate during a heating or forming operation. There's always the possibility of a U-bend collapsing the liner, or that thermal cycling will produce distortion and blistering at the liner-jacket interface.

Need Better Tubing—The Atomic Age demands special-purpose tubing that can meet more stringent specifications. For example, where a nuclear reactor is the heat source for steam generating equipment, tubing must be able to resist corrosion and stress cracking and still have a high degree of heat-transfer efficiency. A metallurgical bond at the interface of the dissimilar metals is essential in minimizing resistance to heat transfer.

Today's thinking calls for corrosion resistant tubing, such as austenitic stainless steel, for the primary side of homogeneous reactor systems. As for chlorides present

Expansion Coefficients As Measured

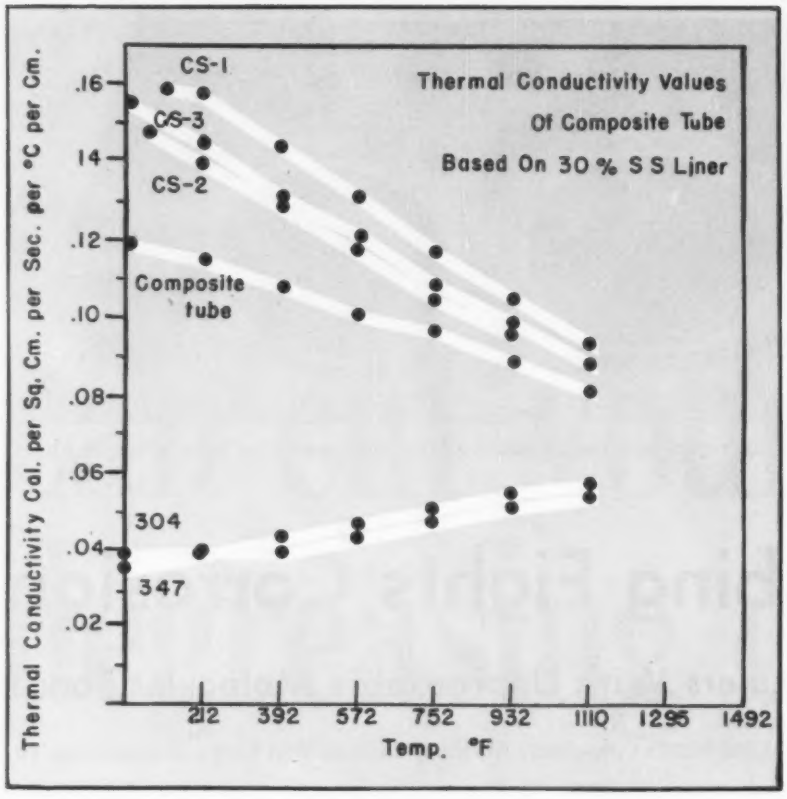
Temp. Range	Coef. of Exp.
68–428° F	7.56 in./in./°F × 10^{-6}
68–450° F	7.59 in./in./°F × 10^{-6}
*68–428° F	7.36 in./in./°F × 10^{-6}
*68–450° F	7.42 in./in./°F × 10^{-6}

* Re-run.

Testing Cycle—cooling from maximum temperature to room temperature at 250° F/hour.

Samples 0.500 in. × 4 in. of 30 pct stainless composite were cut from tubes 2 in. OD × 0.187 in. wall.

Transfers Heat Efficiently



Typical Annealed Properties

Composite Tube Size	C Steel Jacket	Stainl. Liner	Yield Str., psi	Tensile, psi	Pct Elong.	% Stainl. Liner	Hard. R_B
1″ OD x .115″	1015	304	36,200	69,800	54	35	59–62
1″ OD x .115″	1015	304	39,850	69,000	46	35	67Cs 82–84
.500″ OD x .049″	1015	347	43,000	71,000	42	35	—
.500″ OD x .049″	1015	347	42,000	72,400	44	35	—
.500″ OD x .049″	1015	347	43,000	72,400	42	35	—
.500″ OD x .049″	1015	347	44,800	74,000	40	35	—
1.315″ x .109″	1015	304L	33,500	66,400	50	35	72–75Cs
1.900″ x .109″	1015	304L	40,400	70,100	44	35	—
1.900″ x .145″	1015	304L	42,200	73,800	45	35	—
.750″ x .088″	1006	347	38,950	66,480	51	35	—
.750″ x .072″	1006	347	42,100	75,200	50	50	—
1″ OD x .115″	1010	430	40,300	67,000	33	—	66–8Cs
.500″ OD x .115″	1010	430	41,800	60,000	34	—	64–8Cs

And at Higher Temperatures

Composite Tube Size	Temp. °F	Yield Strength, psi	Tensile, psi	Pct Elong.	%Stainless Liner	Modulus
.500″ OD x .049″	450°F	38,830	78,500	27%	35	—
.500″ OD x .049″	450°F	39,160	79,200	24%	35	—
.750″ OD x .088″	500°F	32,880	60,100	37%	35	24
.750″ OD x .088″	750°F	29,000	53,000	41%	35	21
.750″ OD x .088″	1,000°F	21,500	36,000	39%	35	14

in the high temperature waters on the secondary (steam generating side) of the system, it is well known that carbon steel is not affected by chloride stress corrosion.

Clad Components—These conditions open the way for composite tubing with a stainless interior inseparably bonded to a carbon steel outer section. In this case, also, tube-end sheets could be made of clad steel with stainless on the primary side and carbon steel on the secondary side.

Accompanying tables and charts show typical physical and mechanical properties for representative types of carbon-and-stainless composite tubing.

Chemical compositions of the tube components have a decided bearing on the end mechanical properties. If required, these compositions will meet military specifications MIL-T-18063.

Strong and Weldable — In general, composite tubing features the excellent mechanical characteristics of stainless steel. It has high strength-ductility and formability, and it can be readily fabricated by welding.

To date, Allegheny Ludlum has tested the strength of its stainless-clad composite tubing by a variety of methods. The list includes tensile, flare, flattening, and elevated temperature tests, plus tensile and sheer tests of the bond.

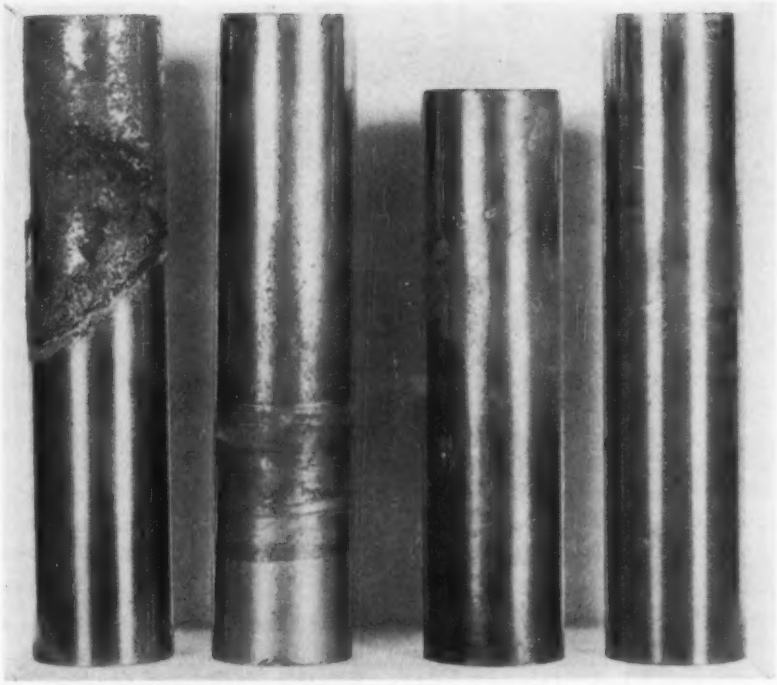
Bonds Don't Fail—None of the shear-test samples failed in the bond; all specimens broke through the section of stainless steel in tension. Shear strength values as high as 42,300 psi to 53,000 psi were recorded. Flare and flattening tests, approximating those performed on stainless of the same gage as the composite, also failed to separate the bond.

Severe thermal shock tests gave added evidence of bond strength. Samples of various diameters were heated to 1500° - 1800°F and quenched as many as 25 times without bond failure. Nor did a series

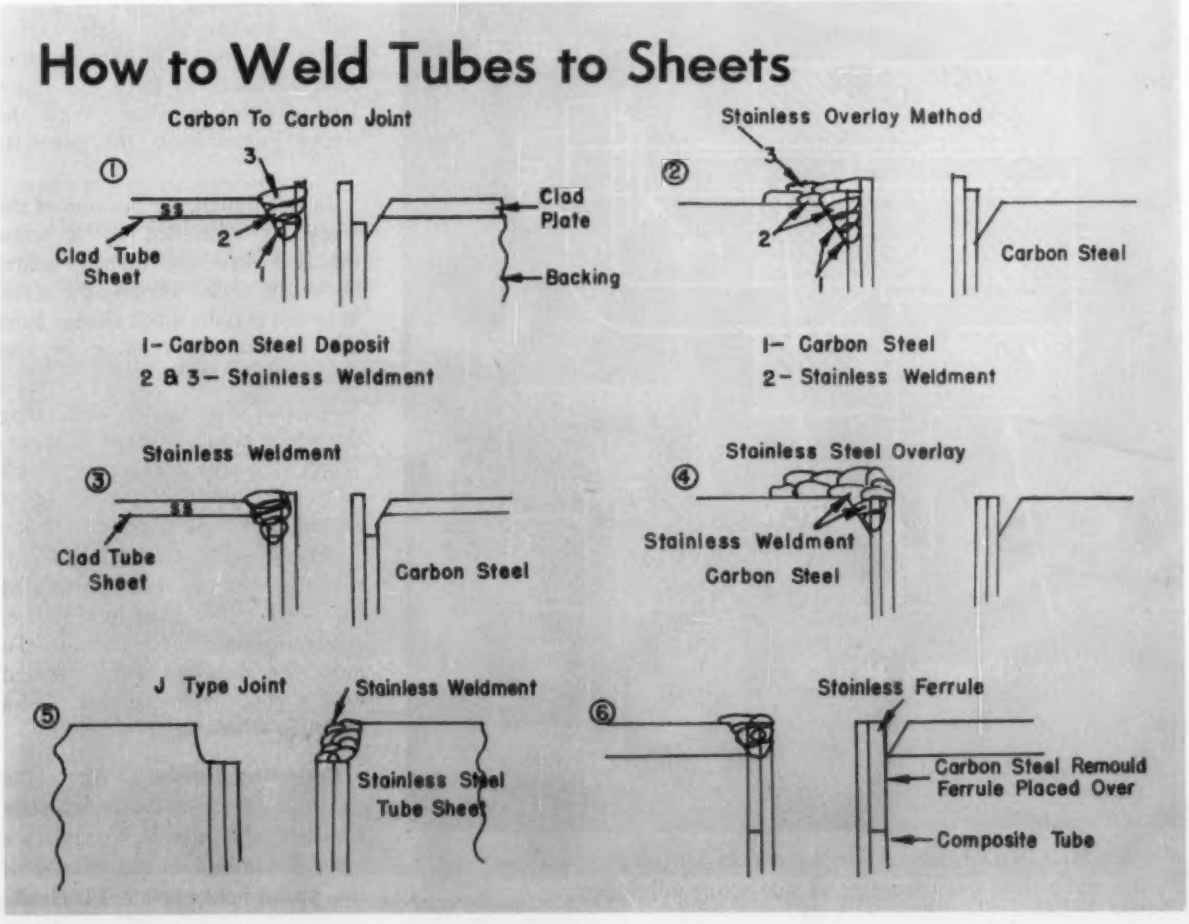
of 600 rapid heating cycles (from 80°F to 600°F) show any bond failure under microscopic examination.

The adjoining photo shows how stainless-and-carbon steel composite tubing samples reacted to corrosion tests. The tests simulated actual moist salt conditions in secondary boiler waters. Partial immersion shows no liquid attack on the jackets, but an oxidizing atmosphere above the liquid level will pit the carbon steel. In no case, however, was the cathodically protected stainless steel liner attacked by either the corrosive liquid or the corrosive atmosphere above.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.



QUITE SAFE: Carbon steel jackets resist hot chloride waters but will pit in oxidizing atmosphere (left). Stainless liners aren't touched in any case.



Leave Idle Punches in Place For Fast Tooling Changes

By Federico Strasser—Consultant, Santiago, Chile

Retractable piercing punches can be put in or out of service without removal from press.

There's a selection of ways to provide for retraction.

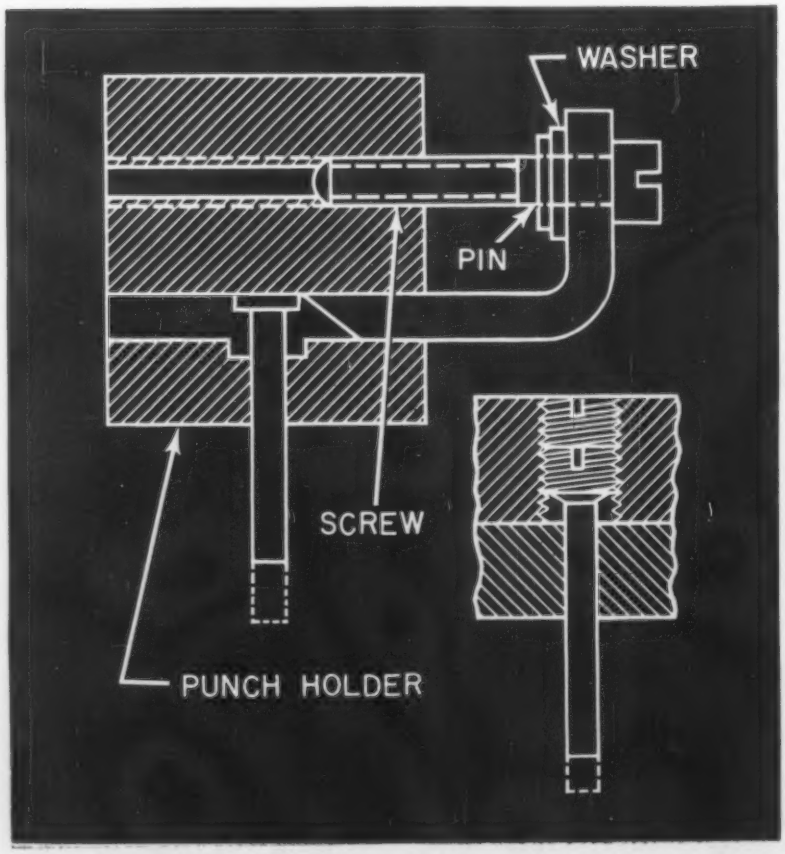
■ In the case of short runs or experimental jobs, it's convenient to use a given press tool for more than one kind of stamping. It reduces tooling costs, so important when the length of run is small.

For second-operation piercing dies or progressive-type dies, retractable piercing punches permit varying holes in stampings that otherwise have the same shape. The press operator can modify the tool from one type stamping to another without the need for removing punches from the tool, or even without having to remove the tool from the press.

Set Screw Adjusts—One method is simple and inexpensive: A hole is threaded in the punch holder of the die set just above the piercing punch. Two set screws are inserted in the hole: The lower screw engages the punch while upper screw serves as a locking device.

With the set screws in a tightened position, the punch is operative. Loosen the screws and the punch is idle.

This design has on drawback: When the press ram covers the punch location, the tool must be removed from the press to make changes.



BASIC METHODS: Simplest is the double set-screw type (lower right). Wedge setup (left) has advantage of side-acting adjustment.

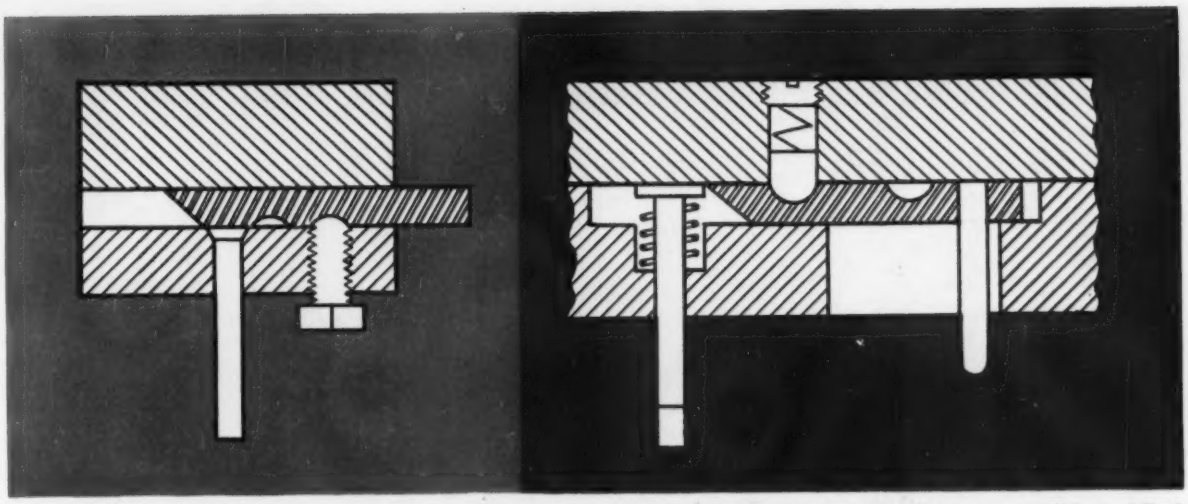
Side-Acting Wedge—A means of avoiding this situation, as described in the succeeding designs, is to provide a backing-plate slide with a wedge. The wedge of hardened tool steel advances to force the punch into working position. With the wedge pulled back, the punch is idle.

In one design, the position of the wedge is controlled by a screw threaded into the punch holder above the slide. Turning the screw in or out permits quick change from idle to working position or visa versa.

Another method of controlling the wedge is to provide a set screw. When the wedge engages the punch in working position, the set screw keeps the wedge in position.

Where positive locking is desired, a small round disk can be provided to engage milled slots in the slide, corresponding to each position. To move the slide the disk is turned until a cutaway in the disk allows the slide to move.

Projecting Handle — Where the punch is far from the punch-plate edge, the slide can be located in a blind slot milled in the interior of the punch-holder plate. A handle



INDEXING LOCKS: A set screw through bottom (left) or spring-loaded indexing finger are two means of holding slide position. Handle operates slide in blind slot (right). Spring under punch head keeps it retracted.

projecting through the underside of the plate operates the slide.

Since the slide operates in a blind slot, it's convenient to provide automatic positioning. This can be done by spring-actuated indexing fingers or steel balls. They engage appropriate slots milled in the slide.

In the case of multiple application of punches, it's good practice to use one common slide. In this way only one adjustment need be made to actuate several punches.

Alternate Operations — In some cases, two punches operate alternately: One punch serves for one stamping and is retracted for the second.

The second punch is idle in producing the first stamping, but is needed for the second. Here a compound slide does the job of alternately actuating the punches.

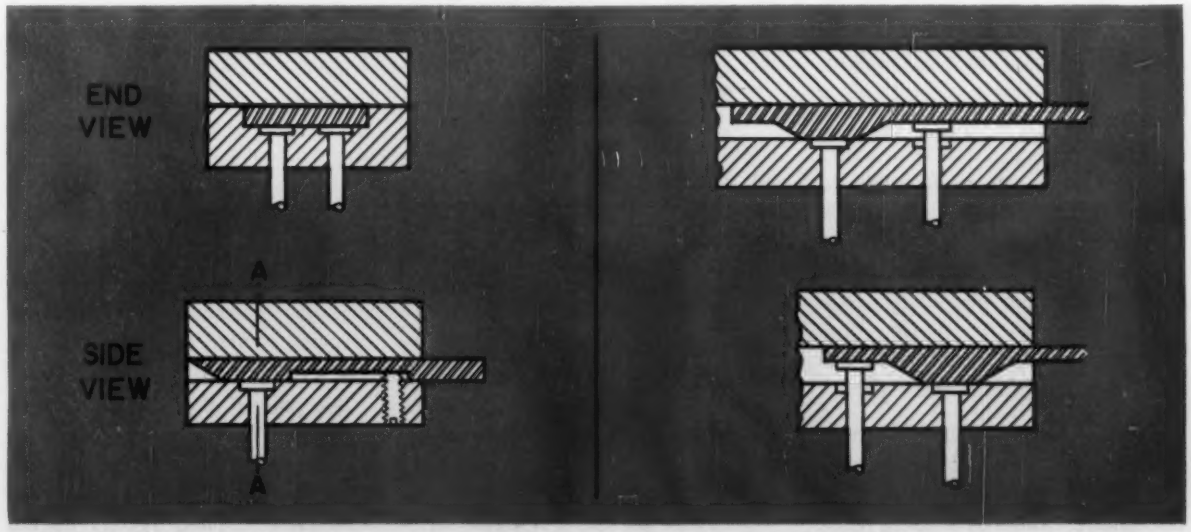
To prevent the slide from being removed from the punch holder, a stroke-limiting device can be in the form of a set screw put in through the bottom of the punch holder. The screw fits in a slot milled in the slide bottom.

How to Avoid Wear — For punches that are mostly idle and move up and down in the punch-holder plate, there's a problem of wearing of the hole. There are several means of preventing this:

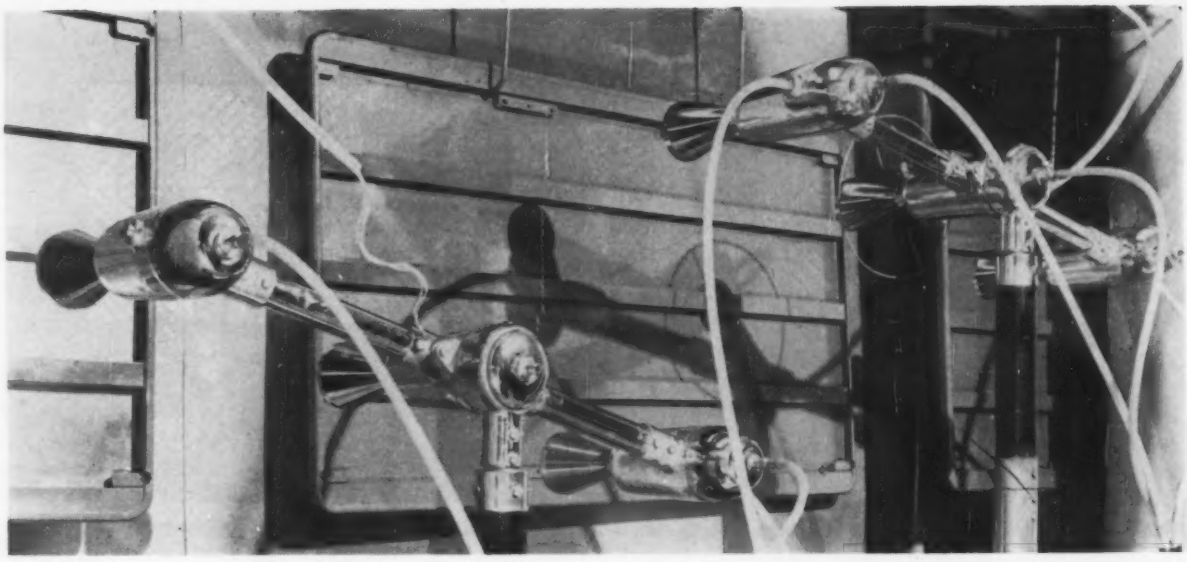
A close fit for the punch in its hole is one answer. The punch will then stay in retracted position.

If the punch holder has sufficient thickness, it's possible to provide a light compression spring under the punch head. Spring pressure keeps it fully retracted when not in use.

Where the punch is located near the edge of the punch-holder plate, then a simple set screw can lock the punch from the side.



DOUBLES: One slide can operate two punches at once (left). Compound slide (right) provides alternate action.



DESK PRIMER LINE: Two triple-head electrostatic units spray desk tops as parts move horizontally on conveyor.

Spray Quality Finishes Faster

As production speeds up, quality of finish has to keep pace.

Electrostatic spray painting applies a quality coat at high rates, with paint savings, too.

▪ How can you keep a finishing department's production at high level without losing quality? Automatic electrostatic painting does the trick at Steelcase, Inc., Grand Rapids, a manufacturer of steel office furniture.

While building a new desk plant, Steelcase took the opportunity to modernize its finishing setup with four paint conveyor lines: a main electrostatic line, which handles the bulk of painting, one electrostatic line for desk tops, a hand spray line for small custom runs, and a dip line for miscellaneous small parts.

Saves on Paint—The new setup not only increases production with less labor, but improves quality of the finish, along with using one-third less paint.

These results are largely due to switching from hand spray to automatic Ransburg No. 2 process electrostatic spray painting. The spray units are built by Ransburg Electro-Coating Corp., Indianapolis.

From a central storage room, constantly agitated paint is pumped to the integrated systems. Desk assemblies, such as pedestals, drawers, and drawer inner heads, are loaded on a conveyor at the first floor storage station and travel overhead to the second floor paint area.

A four-stage cleansing and phosphate coating line prepares parts for painting. Parts pass through a dry-off oven before going on to finishing.

Takes Heavy Load—The 1600-ft main conveyor line handles about 75 pct of the load, operating at 20 fpm. At the first station, an electrostatic unit applies a zinc chromate primer as parts loop around the ceiling-mounted 20-in. diam disk atomizer.

Indexers on the conveyor turn the parts as they pass through the spray area. At a second station a single bell atomizer paints the underside of desk pedestals.

After a 6-minute flash-off, the conveyor line goes through two water-wash booths. Hand sprayers reinforce recessed areas, such as drawer interiors.

Finishing Steps—Parts then travel through two identical finish booths each with similar ceiling mounted reciprocating 20-in. disks. A 3-minute flash-off separates the two finishing coats. After a 15-minute bake in radiant heat ovens at 325°F, the parts return by conveyor to the first floor for assembly.

In the desk-top electrostatic line, two triple head units with four bell atomizers each apply rust inhibiting zinc chromate primer. Hand spraying is used at the second station to apply paint to edges.

As painted tops move through a radiant baking oven, they pass direct to the first floor linoleum application area. The textolite top material is applied directly on the hot parts.

Improve Fatigue Strength With Abrasive Tumbling

Barrel tumbling is widely used to round corners, remove burrs, improve surface finish.

But it also provides an extra benefit. By inducing a compressive stress in metal surfaces, it actually boosts fatigue strength.

■ The fatigue properties of many metals can be improved by shot peening. The improvement results because the peened surface is stressed in compression. But what about abasive barrel tumbling? In addition to its role as a surface smoother, will it also add to a metal's fatigue strength?

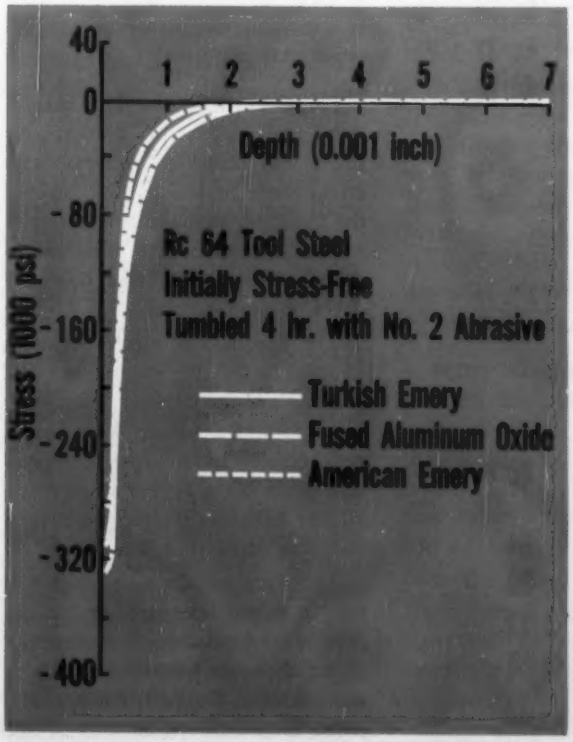
The answer is an emphatic "yes." Its reliability stems from the results of a Mellon Institute research program. Tumbling metal parts with ground surfaces in aluminum oxide abrasives actually replaces unwanted grinding stresses with beneficial compressive stresses. Sponsored by the Abrasive Grain Association, the test program proves the usefulness of tumbling in attaining better fatigue strength.

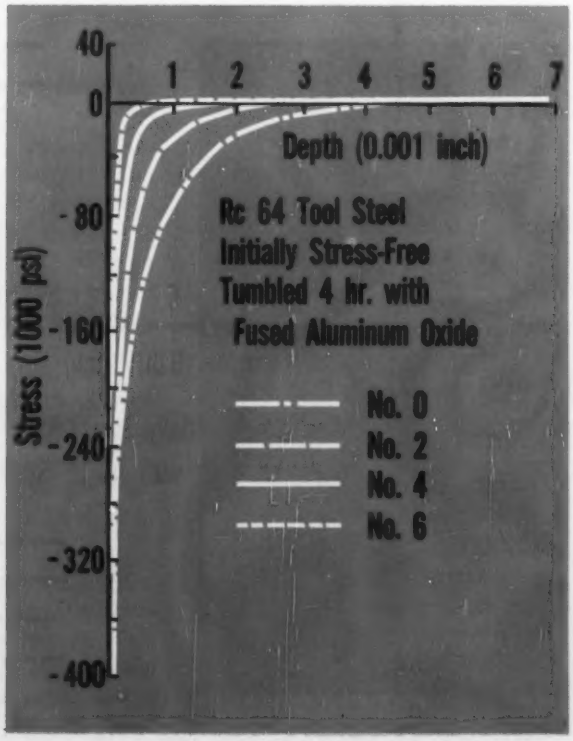
Studies Stresses—It also sheds light on other aspects of the distribution of residual stress in metals. Among its contributions: it determined how the residual stresses caused by tumbling are distributed in depth below the surface, how they are affected by tumbling conditions, and how they are influenced by the workpiece and any initial stresses that it may contain.

For test purposes, 2-in. squares were cut from ¼-in. annealed bars of manganese, oil-hardening tool steel. The steel contained 0.90 pct C, 1.25 pct Mn, 0.50 pct W, and 0.50 pct Cr. About 0.010 in. of stock was ground off all surfaces of the test pieces to remove possible defects. Another 0.030 in. was ground from the test surface of 48 specimens to be tumbled.

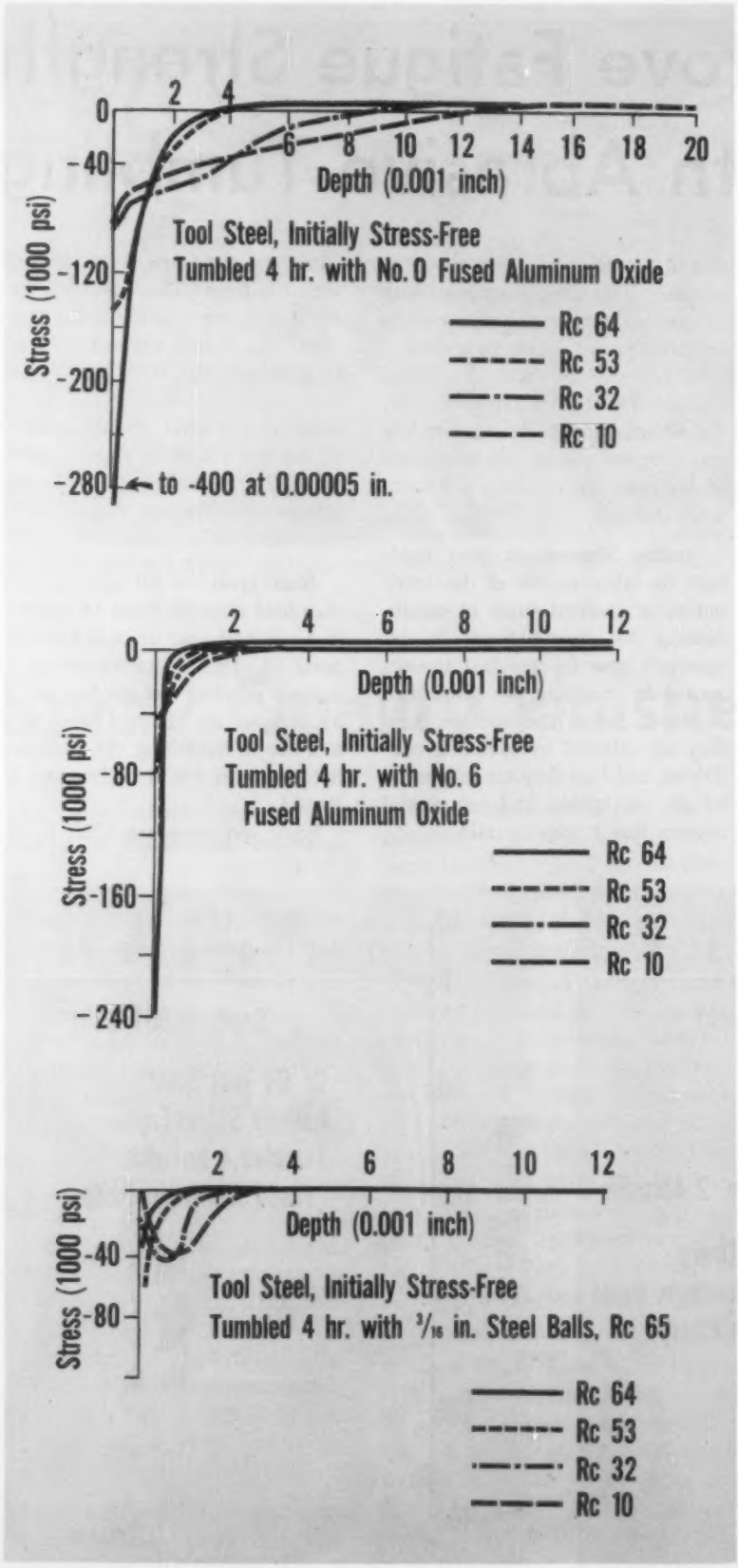
Heat Treat — All squares were then held at 1450°F for 15 minutes in a salt bath and quenched in agitated oil. This treatment served to remove grinding stresses but set up a characteristic residual stress system due to hardening. As-quenched hardness was found to be close to Rc 64.

Some specimens were left in the





FIGS. 1 & 2: Curves at left show how three kinds of abrasive affect residual stress in fully hardened tool steel by tumbling. Chart at right plots the influence of abrasive particle size on same steel.



FIGS. 3, 4, & 5: Effect of steel hardness on residual stresses induced by tumbling with No. 0 abrasive, No. 6 abrasive, and steel balls.

as-quenched condition for later tests. The remainder were tempered in salt baths at times and temperatures to produce three hardness levels: Rc 53, 32, and 10. After additional surface preparations, the specimens were ready for barrel tumbling tests. One side of test specimens, for example, was lapped and polished to provide a good surface for sebsequent curvature measurements.

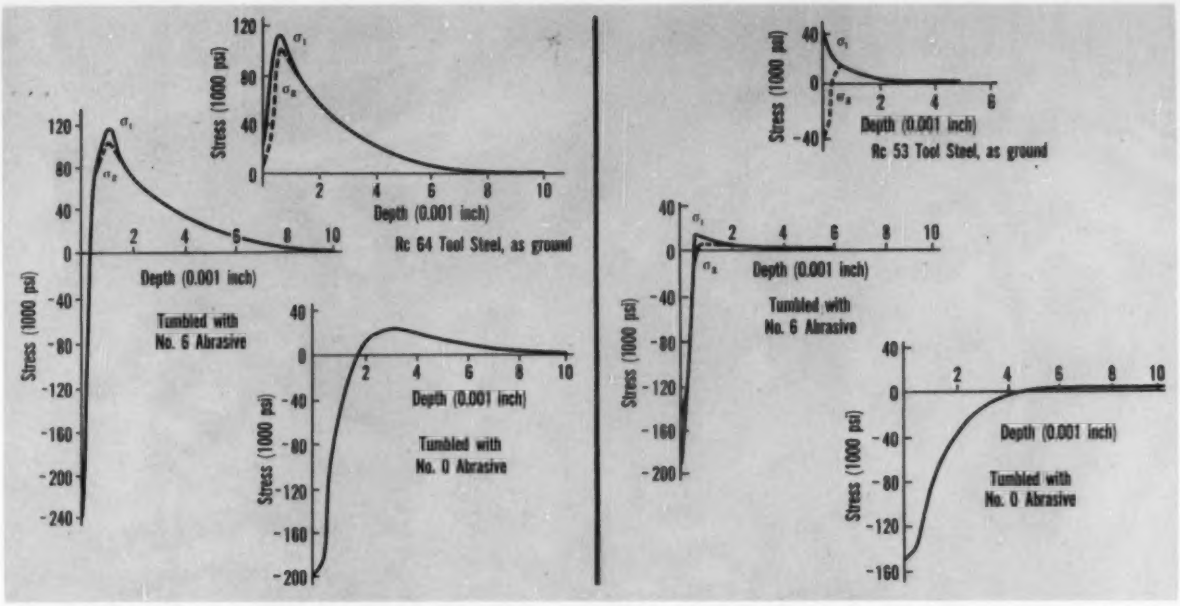
In Compression — The curvature measurements are similar to those made with Almen strips. If one side of the specimen is masked, tumbling will cause the specimen to develop a bend or curve. If the curve develops in a direction opposite to the exposed side, residual stresses are predominantly compressive. If it moves in the direction of the exposed side, stresses are mainly tensile. The magnitude of bend is measured in terms of arc height and evaluated in terms of stress.

When stress-free specimens were tumbled, the stresses induced were uniformly compressive. The maximum compressive stress was at the surface. Stress diminished to zero at a few thousandths of an inch beneath the surface.

Large Particles — The magnitude and depth of compressive stress was found to increase with an increase in the particle size of the tumbling medium. For example, a No. 2 particle size produced a deeper compressed layer than did a No. 6 particle size.

The hardness of steel specimens affected both the magnitude and the depth of the stressed layer. With other factors constant, lower hardness results in a lower compressive stress but a deeper stress-layer. Higher hardness produces a reversal-higher stress but less depth.

The kind of abrasive used had only a minor influence on the degree of compressive stress obtained. Three abrasives were tested: American emery, Turkish emery, and fused aluminum oxide—all of the same particle size. American emery is slightly more effective


Stress (1000 psi)
Depth (0.001 inch)
Rc 64 Tool Steel, as ground
Tumbled with No. 6 Abrasive
Tumbled with No. 0 Abrasive
Rc 53 Tool Steel, as ground

FIGS: 6 & 7: How tumbling affects initial grinding stresses in Rc 64 (6) and Rc 53 steels (7). Solid and dashed lines represent principal stresses parallel and perpendicular, respectively, to the grinding marks.

than the other materials tested.

Using Steel — Hardened steel balls (3/16-in. diam) were also tried in tumbling tests. These had a hardness of Rc 64 and were of about the same size as the fused aluminum oxide particles.

In tumbling specimens with hardnesses of Rc and 64 and Rc 53, steel balls produced less compressive stress than abrasive media. With specimens at the Rc 32 and Rc 10 hardness levels, the balls induced maximum stress a few thousandths of an inch below the surface. This condition may be due to the fact that the balls are round and the abrasives have sharp points.

Specimens with induced stresses due to grinding were also tumbled under various conditions. The initial grinding resulted in surface tensional stresses that reached a maximum parallel and perpendicular to the grinding direction. Tumbling removed these tensional stresses and replaced them with compressive stresses.

Grinding Stresses — In general, the ground surfaces responded similarly to stress-free surfaces. The degree to which tensional stresses were replaced depended on the type of abrasive media, particle size, and the hardness of the specimen. In the Rc 64 specimen, the small-sized abrasive (No. 6) changed the surface stress from slight tension to substantial compression. It did not appreciably change the peak of the tensile stress.

When these same high-hardness specimens were tumbled with large (No. 0) abrasive, the surface stress was substantially changed from tension to compression. During this induced-stress change, the tensile peak of about 120,000 psi at a depth of 0.0005 in. was changed to about 20,000 psi at 0.003 in.

Better Response—The tumbling medium has an even more pronounced effect on the softer steels. The tensile peak disappears completely, But the compressive surface stresses are not as great as in the Rc 64 specimen.

In the softer specimens, even a small particle-size abrasive appreciably modifies the tensile peak. This result supports the theory that the increased effectiveness is due to the greater ease with which softer steels can be cold-worked by abrasive media.

Still another important point was uncovered regarding stresses present in heat treated surfaces. When abrasive tumbled, these specimens reacted similarly to ground specimens.

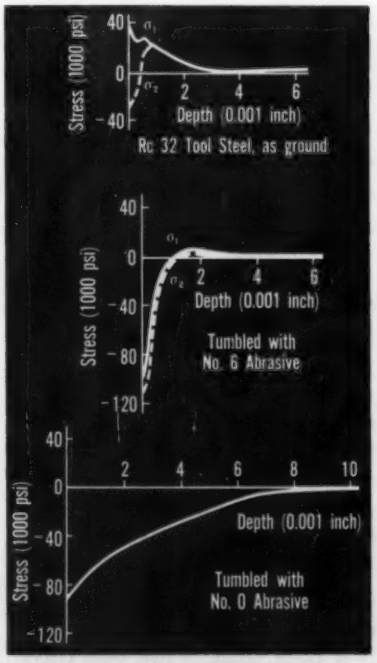
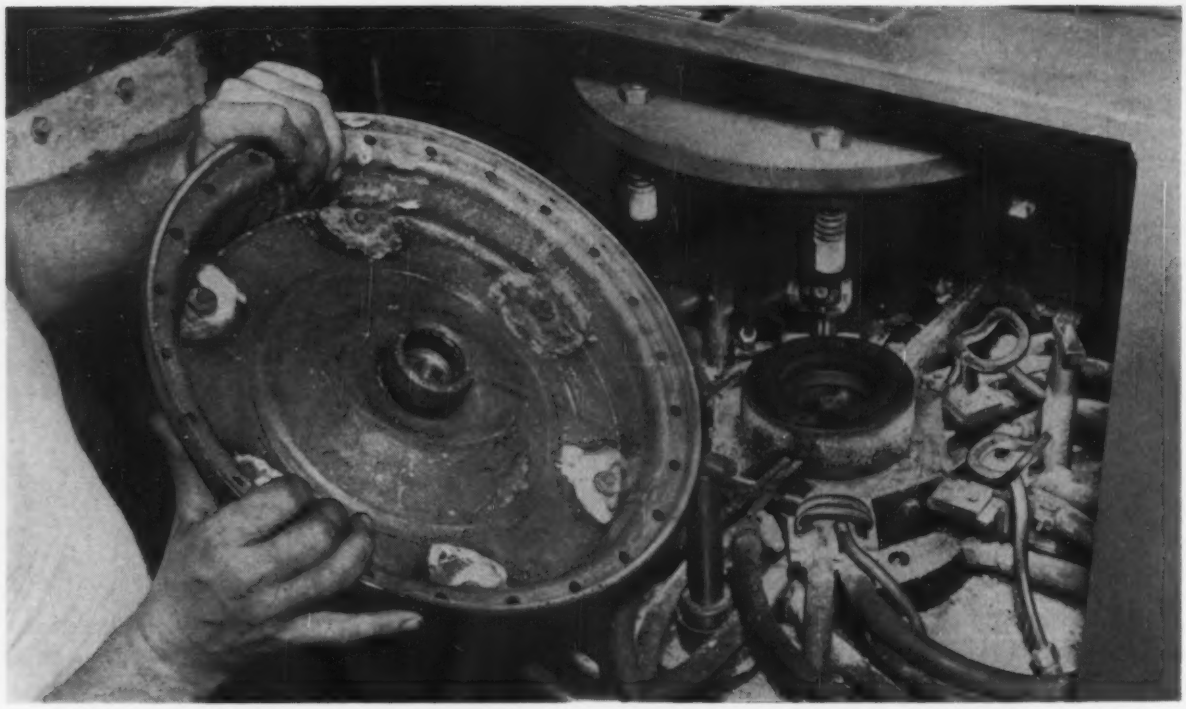


FIG. 8: Curves show the effect of tumbling on initial grinding stresses at a lower level of hardness, Rc 32.



SEVEN IN ONE: Six studs and hub in the center of this cover get brazed in one simple operation.

Compact Setup Joins, Tests Assemblies At High Output

Simple, compact work areas not only take less plant space, they make it easier for one operator to do many jobs.

Typical example: A setup that rapidly assembles, brazes and tests seven joints at once.

▪ In less than four minutes, one operator brazes and tests seven joints in a transmission cover. He does this on a 7-coil induction setup, silver-brazing the seven parts in one highly compact area.

The finished assembly, part of a housing for light-duty truck automatic transmissions, consists of a 12-in. diam drawn steel cover; six ⅜-in. diam studs and a 1¾-in. tubular hub project through its bottom.

Assembly, brazing, rinsing and testing all take place in one simple layout, tended by the one operator. He assembles parts with the cover cradled in a simple fixture. It consists of four blocks which raise the cover off the work surface, providing clearance for the projecting studs and hub.

Prewarm Flux Helps — Before inserting the studs and hub, he brushes warm flux on them. He also puts a protective flux coating on areas surrounding the holes in the cover. Prewarmed flux activates at a lower temperature and protects parts from oxidation as they heat to brazing temperature.

During assembly, the operator puts an 0.062-in. gage ring of silver alloy between the inside surface of the cover and each part. This ring is of Easy Flo 45 alloy, a product of Handy & Harman, New York.

Diametrical clearance between parts and holes is 0.005 in.

Heats From Beneath—A 50-kw induction heater does the brazing. This heats the cover from its underside so that the silver alloy draws down from the upper surface, brazing the joint completely from top to bottom.

Irrespective of gravity, silver filler materials flow toward the hottest area. By proper positioning of the heat source, users can direct its flow into a joint.

The holding fixture's four T-shape posts, which support the rim of the cover, position it so that

the six studs and the hub center in each's own induction coils. Since studs are near the cover's sidewall, heating coils are about at a right angle to heat both the side and bottom area around each stud evenly.

Brazes in 25 Seconds — The brazing fixture's top section holds the six studs and hub in position. Consisting of seven spring-loaded plungers mounted on a common base plate, this part of the fixture raises and lowers via a pneumatic cylinder.

The plungers keep parts from shifting during brazing. They also provide the follow-up pressure that seats them against the cover when the silver brazing alloy ring melts and flows.

When the top section lowers, it automatically initiates the 25-second brazing cycle. Current then shuts off. Air jets in the center of each coil cool the assembly for 35 seconds.

Tests After Wash—At the brazing cycle's end, the operator uses an air-operated rack to dip the cover in a cleaning tank. Being side by side with the brazing machine, it allows soaking while flux is still warm and more soluble. The tank removes residue flux.

Then comes testing. Since the transmissions will work in a fluid medium, they must be absolutely leak-tight. So, from dipping, the brazed covers go to a test fixture. The six projecting studs slip right into sockets mounted on a base plate; each socket contains an O-ring which forms an air-tight seal around each stud.

Air Spots Rejects—After pneumatically lowering a circular holding plate onto the top of the cover, the operator admits 80-psi air pressure into the sockets. An imperfect joint shows up when a pressure gage behind the tester shows a pressure drop.

Leakers, of course, get set aside. Later, a hand torch rebrazes these rejects, if there are any.

COMPACT WORK AREA: In this area one operator assembles, brazes and tests one part every four minutes. Part of brazing unit is at right.

In production operations which follow, every joint also is shear-tested for mechanical strength with a torque wrench at a 45 ft-lb loading. This is well below the 40,000-psi average shear strength of a good silver brazed joint in carbon steel.

Puts Out 85 Hourly—With this semi-automatic setup, conveniently laid out in a compact work area, one man handles the entire assembling, brazing and testing operation. At a work rate of about one cover assembly every four minutes, he thus can produce 85 high-strength silver-brazed joints an hour.

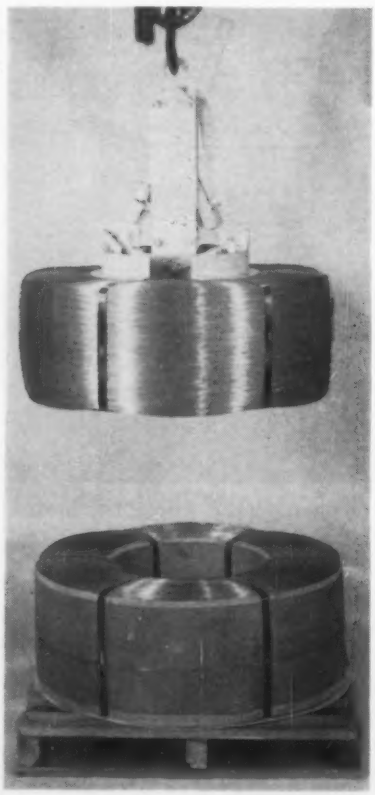
Joint quality is consistent with a reject rate of less than 1 pct.

Cut Wire Handling Costs

If your plant handles long, continuous runs of wire, here's an approach that should save time and money.

▪ A new system of wire handling —developed by a wire producer— should pay off in tidy savings of time, labor, and money for the user.

According to the developer, John A. Roebling's Sons Corp., Trenton, N. J., the savings stem from a combination of improved materials handling techniques and more efficient production methods. The Roebling system for making the job of wire handling easier is completely integrated. It begins when the wire comes out of the drawing machines or the coating rigs. It ends when the wire is actually put into use.



EASY LIFT: Handling device, usable with any type hoist, picks up the coil quickly. Its strong lock-lever assures operator safety.

New Packaging—The development involves a reel-less packaging of wires in sizes from 0.030 to 0.060 in. An aluminum reel with demountable flanges and a removable paper core is used as the take-up reel. As it takes up wire coming out of the machine, its appearance is not much different from any other take-up reel.

But it is basically different. The reel-less package has a traverse of 11 in., campared with 9½ in. for the old reel. The package has a diameter of 28½ in. It later fits a 30 in. reel (with a demountable head) at the wire user's plant.

More Weight — The new coil contains about 1000 to 1050 lb of wire, compared with 750 to 850 lb for the old reel. This added weight per coil reduces downtime for the pay-off machine and operator.

After Roebling's production reel has been filled with wire, steel straps are tightly wound, evenly spaced, around the torus or coil. A demountable flange is then removed. The steel straps prevent loosening or shifting of the wire during further handling.

Individual reel-less cores are protected by waterproof paper. They are stacked two-high on a 30-in. square pallet to which they are strapped. A waterproof paper shroud fits snugly over each palletized unit.

Eases Testing — When the wire user receives the pallet, the shroud is removed, exposing the two cores. The wire has not shifted or loosened. It has been held tightly in position by steel bands and straps. The last 10 to 15 ft of wire is carried to the outside of the waterproof paper to make testing easier. This also saves time.

A wire lifter (usable with any type hoist) is now lowered into the core of the wire coil. This lifting device has gripping flanges which fit inside the fiber core and outward. They exert a radial pressure to lift the coil. The core of wire is then removed from the pallet and lowered onto one of two demountable flanges fastened to a tilt-table.

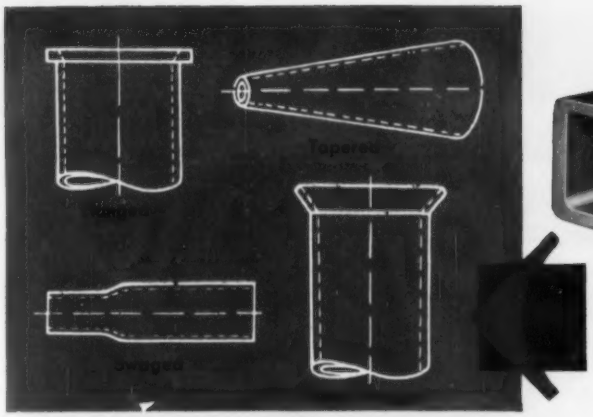
After the second flange is positioned, a torque wrench and chuck are used to tighten up the assembly. The lifter is released from the center of the coil. The other half of the demountable flange is placed in position. As soon as this flange has been fastened, the tilt-table flips the reel up on its edges. Now it is ready to rôll to a pay-off stand.

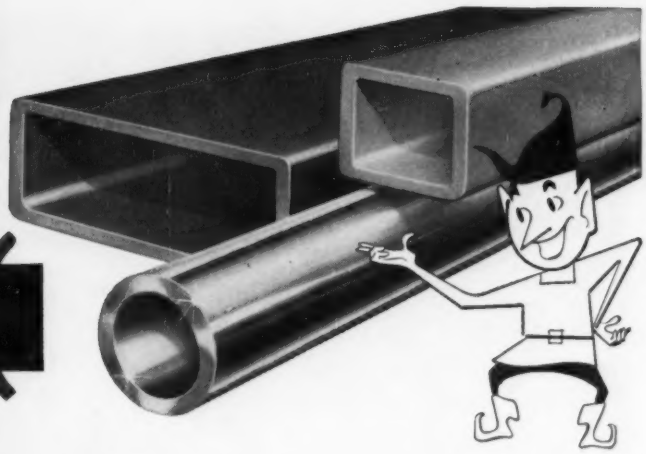
Less Storage — Many advantages are derived from this system. There are no empty reels to store, return, or keep books on. Freight costs on returning empty reel are eliminated. Storage space can be better utilized because the palletized units can be stacked three-high.

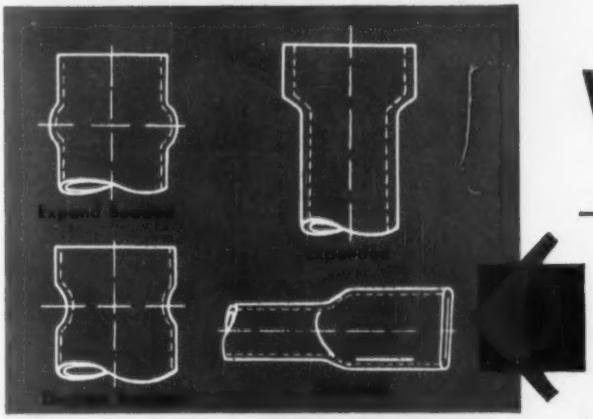
Also, no major changes in current equipment are needed. Personnel are not required to learn new skills. The small amount of additional handling equipment is simple and easy for the operator to master.

More Mobility — Best of all, the palletized cores are easily brought right to the job site. The whole job of unpacking the coil and putting it to actual use takes less than 5 minutes.

Roebling started the system in conjunction with the use of its tire bead wire. Major rubber tire makers are now using it. Hose manufacturers use it for handling high-carbon, safety pin wire. It can also be used by spring makers, users of lacing wire, or any operation involving long, continuous runs of wire.







WELDED TUBING

fabricates

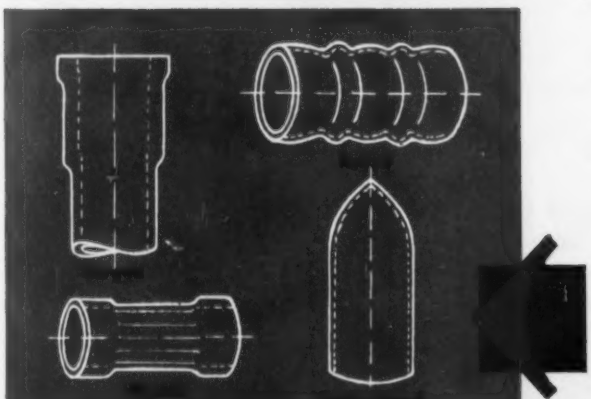
every way

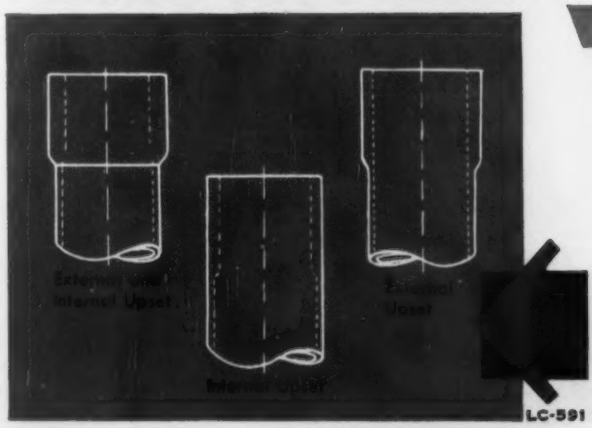
Welded steel tubing fabricates readily by all methods because of its inherent properties and uniformity of dimension and wall thickness.

Shown at left are some basic tube fabricating possibilities, and welded steel tubing fits them all. It is readily machinable, joins by literally every known method, and is available in all weldable grades of carbon, stainless steel and other alloys in round and special shapes.

When it's tubing you need—specify *welded* steel tubing from one of the quality tube producers.

WRITE for Bulletin 8591 "Welded Steel Tubing."





LC-591

FORMED STEEL TUBE INSTITUTE, INC.

850 HANNA BUILDING
CLEVELAND 15, OHIO

• Armco Steel Corp. • The Babcock & Wilcox Co., Tubular Products Div. • The Carpenter Steel Co., Alloy Tube Div. • Clayton Mark & Co. • Damascus Tube Co. • Jones & Laughlin Steel Corp., Electricweld Tube Div. • National Tube Div., United States Steel Corp. • Ohio Seamless Tube Div. of Copperweld Steel Co. • Republic Steel Corp., Steel and Tubes Div. • Revere Copper and Brass Inc., Rome Manufacturing Company Div. • Sawhill Tubular Products, Inc. • Southeastern Metals Co. • The Standard Tube Co. • Standard Tube and T. I. Ltd., (Canada) • Superior Tube Co. • Trent Tube Co., Subs. Crucible Steel Co. of America • Wall Tube & Metal Products Co.

FOR THE MACHINERY PART

THAT TAKES THE BEATING

A cut-off knife made of HAYNES STELLITE alloy No. 19 slices through molten glass at 2200 deg. F. Despite the intense heat of the glass being molded into tumblers, and the severe erosive action of the glass on metal, the cut-off knife maintains a 0.015-in. clearance between itself and the mold ring . . . *far longer than any other material ever used.*

HAYNES Alloys *will do the job!*

Are you looking for a tough metal part to improve your machinery? It will pay you to look into HAYNES alloys. There are more than 15 from which to choose, including HAYNES STELLITE cobalt-base alloys, HAYNES iron-base alloys, HAYSTELLITE cast tungsten carbide, and HASTELLOY nickel-base alloys. They are available as castings, forgings, completely fabricated parts, or as sheet and bar stock. Parts can be furnished machined or ground to specified size and finish.

Our engineers will help you pick the right HAYNES alloy to resist many conditions of wear, heat, or corrosion.

HAYNES ALLOYS

HAYNES STELLITE COMPANY

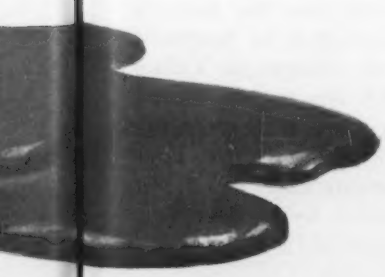
Division of Union Carbide Corporation

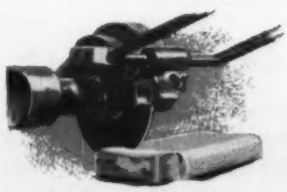
Kokomo, Indiana

UNION CARBIDE

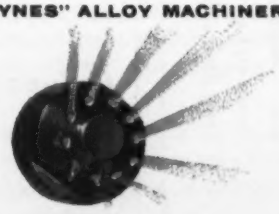
The terms "Haynes," "Haynes Stellite," "Hastelloy," "Haystellite" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

TYPICAL "HAYNES" ALLOY MACHINERY PARTS





Tough, long-lasting metal-cutting saws over 20 inches in diameter, made of HAYNES STELLITE alloy sheet, slice the tops off copper ingots.



Steam atomizer fuel burner nozzles of HASTELLOY alloy C resist corrosive agents and erosion for months, retaining essential contours.

High-temperature strength and corrosion resistance of diesel combustion chambers made of HASTELLOY alloy C make them "good for life of the engines."

WELDMENTS
Machine bases, components, environmental and test equipment, pressure vessels . . . welded fabrications of every kind. Extensive cutting, forming, welding, X-ray and gamma ray equipment. Qualified welders. All recognized codes. Send your drawings and specifications to us for prompt detailed quotations.
ACME WELDING
DIVISION OF THE UNITED TOOL & DIE CO., WEST HARTFORD 10, CONN.

PATENT REVIEW

New Patents In Metalworking

Hot Top Assembly

Hot top and mold assembly, E. J. Kaufman, Sr. (assigned to Valley Mould & Iron Corp., Hubbard, Ohio), Dec. 9, 1958. An improved hot top and mold assembly, used in producing high quality steels, has a joint which seals by a ropelike gasket. This is effective despite warpage and surface irregularities. The hot top decends automatically as the poured ingot shrinks. No. 2,863,192.

Sinter Filter

Corrosion resistant sintered iron-silicon filter, C. G. Goetzel and J. L. Ellis (assigned to Sintercast Corp. of America, Yonkers, N. Y.), Dec. 9, 1958. A corrosion-resistant porous alloy consists of 10 to 60 pct Si, the remainder Fe. Sintering of powder is under carefully controlled temperature and pressure. No. 2,863,562.

Steel Shot

Method of making steel shot, P. C. Chen (assigned to American Wheelabrator & Equipment Corp., Mishawaka, Ind.), Dec. 9, 1958. This process makes solid steel shot free from cracks and hollows. Shot contains Fe, C, Mn, and Si. No. 2,863,790.

Galvanize Control

Galvanizing furnace temperature control, O. R. Olson, Dec. 9, 1958. Quick cooling of a galvanizing kettle furnace results from blowing cold air into the combustion chamber. When proper temperature is reached, it maintains during an idling period at a reading below the spelter's volatile point. No. 2,863,643.

Desulfurization

Oil-treated calcium carbide for desulfurization of iron, E. F. Kurzinski (assigned to Union Carbide Corp., a corporation of N. Y.), Dec. 9, 1958. In desulfurizing ferrous melts, a mixture of nitrogen gas, SAE No. 10 oil, or the like, and 14-200 mesh CaC_2 injects into the melt. Intensity of the oil volatilization in the metal bath markedly improves the desulfurizing action of the CaC_2 No. 2,863,755.

Oxalate Coatings

Production of oxalate coatings on iron and steel, P. de Cerma (assigned to Montecatini Societa Generale per l'Industria Mineraria e Chimica, a corporation of Italy), Dec. 9, 1958. In forming oxalate coatings on iron and steel, a process coats metal bodies with an aqueous solution of oxalic acid and sodium nitrite. Nitrite concentration is between 2 and 4 grams per litre. No. 2,863,791.

Scale Removal

Process for assisting in the removal of scale from alloy steel, H. H. Todd (assigned to Superweld Corp., North Hollywood, Calif.), Dec. 9, 1958. This process removes scale from alloy steels relatively high in Cr, W, V, Mo, etc. Prior to heat treatment metal gets a coat of alkali metal hydroxide of the like. Thereafter, during heating, the

acidic alloying element converts to a compound that's soluble in an acid pickling solution. Heated metal then is pickled in an aqueous inorganic acid pickling solution. No. 2,863,792.

Corrosion Reduction

Inhibition of corrosion of iron in acids, J. C. Ball, Jr. (assigned to West Virginia Pulp & Paper Co., New York, N. Y.), Dec. 9, 1958. To reduce acid corrosion of iron and steel tanks (in metal pickling, other acid baths) a small addition of lignin amine makes such baths less destructive. No. 2,863,780.

Cast Iron

Coated magnesium iron treatment, G. E. Spangler and J. W. Estes (assigned to Air Reduction Co., Inc., New York, N. Y.), Dec. 9, 1958. A cast-gray iron melt contains more than 0.03-pct S. Injecting enough CaC_2 reduces S to that amount. A mixture of 5 to 20-pct Mg chips, 2 to 10-pct CaO and 70 to 93-pct finely divided CaC_2 is then injected beneath the surface. Graphite in the cast iron is in nodular or spheroidal form. No. 2,863,764.

"Patent Review" appears in the third issue of The IRON AGE each month. Look for it in the March 19 issue.

Strong, Ductile Steel

Ductile and tough high strength steel, S. J. Rosenberg and C. R. Irish (assigned to U. S. Sec. of the Navy), Dec. 9, 1958. A low alloy structural steel consists of 0.35 to 0.45-pct C, 0.50 to 1.50-pct Mn, 1.3 to 2.0-pct Si, 1.5 to 2.5-pct Ni, 0.7 to 0.9-pct Cr, 0.2 to 0.4-pct Mo, 0.04 to 0.20-pct Ti, 0.0000 to 0.0025-pct B, the balance Fe. This steel normalizes above its upper critical temperature, hardens by quenching in oil, tempers by dual successive heating-air cooling cycles. No. 2,863,763.

Copies of U. S. Patents are available at a cost of 25¢ each from Commissioner of Patents, Washington 25, D. C.

BE ON THE SAFE SIDE...
and cut handling cost doing it
WITH ALLIS-CHALMERS LIFT TRUCKS

Allis-Chalmers lift trucks are built to *produce* and *protect*. Ask any user about their performance... how they out-maneuver... how you can count on them for long life with low maintenance.

Then check on the many ways they protect men and equipment. Note their sure-footed stability on steep grades... strength from frame to mast... freedom from obstructions in the operator's compartment... location of the fuel tank — away from the engine.

FOR HAZARDOUS AREAS PLAY IT REAL SAFE WITH SPECIAL SAFETY TRUCKS

Allis-Chalmers GS (gasoline safety), LPS (LP gas safety) and DS (diesel safety) Trucks bear the Underwriters' Laboratories inspection seal for working in areas where there are flammable liquids or gases, combustible dusts or ignitible fibers.

Accepted by MILL MUTUAL FIRE PREVENTION BUREAU

Allis-Chalmers DX Safety Diesel Lift Trucks were developed to provide exceptional protection against explosions. The starter is hydraulic, gauges are mechanical, water manifold and muffler reduce temperature of usually-hot surfaces and quench exhaust sparks.

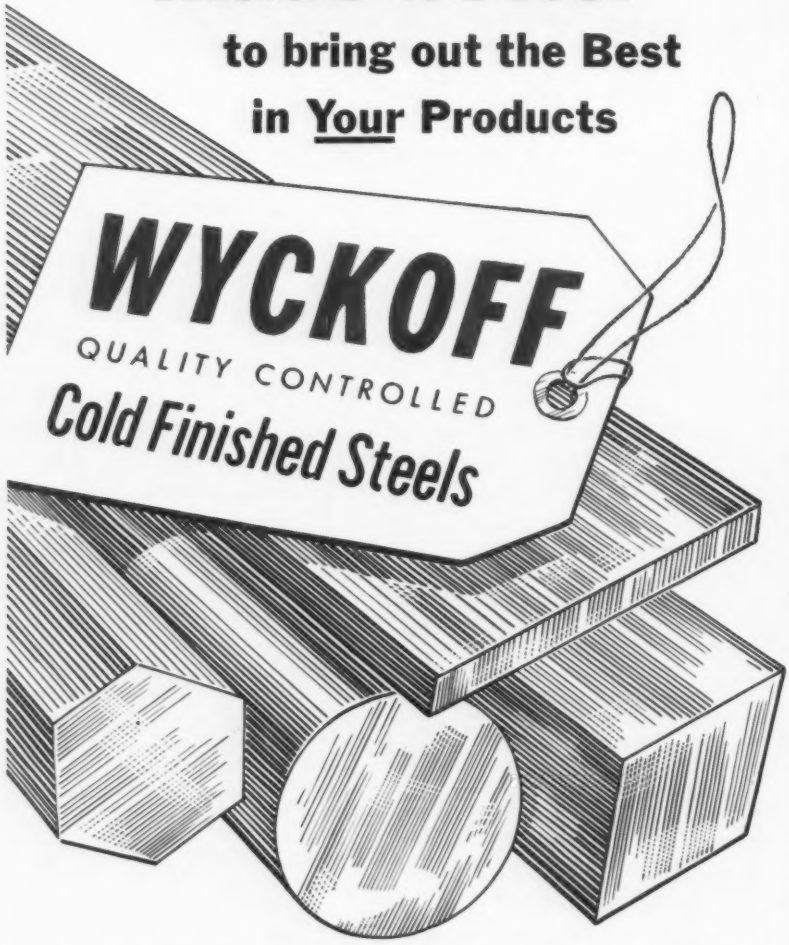
No matter what the job, your Allis-Chalmers material handling dealer can show you how you can have the best in both production and protection. Allis-Chalmers, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

BH-87

made better

to bring out the Best in Your Products



Constant quality and metallurgical control throughout every step in the processing of Wyckoff Cold Finished Steels is your assurance of:

- *Ultimate Machinability*—in any type of screw machine or lathe
- *High Production Rates*—of closely dimensioned, accurate parts
- *Longer Tool Life*—requiring fewer tool grinds; minimum down time
- *Superior Surface Finish*—insuring close control of finished part
- *Physical Properties*—to meet your specifications

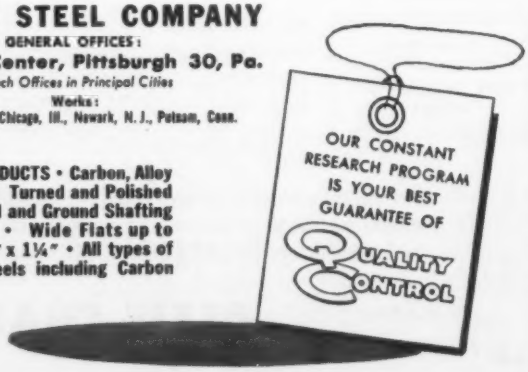
Let our metallurgists work with you in selecting the best analyses for your specific requirements.

SPECIALISTS IN COLD FINISHED STEELS EXCLUSIVELY

WYCKOFF STEEL COMPANY

GENERAL OFFICES:
Gateway Center, Pittsburgh 30, Pa.
Branch Offices in Principal Cities
Works:
Ambridge, Pa., Chicago, Ill., Newark, N. J., Putnam, Conn.

WYCKOFF STEEL PRODUCTS • Carbon, Alloy and Leaded Steels • Turned and Polished Shafting • Turned and Ground Shafting • Large Squares • Wide Flats up to 12¾" x 2¼" and 14" x 1¼" • All types of Furnace Treated Steels including Carbon Corrected Steels



FREE LITERATURE

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 143.

Thread Rolling

For large or small production runs, a new two-die type thread rolling machine is described in a bulletin. The horizontal, cylindrical die machine can feed manually or automatically. (Reed Roller Thread Die Co.)

For free copy circle No. 1 on postcard, p. 143

Finishing

Suggestions for ways to improve and expand barrel finishing and wet blasting processes appear in a company publication. (Techline Div., Wheelabrator Corp.)

For free copy circle No. 2 on postcard, p. 143

Chemicals

Information on 6500 organic and inorganic chemicals and solutions is given in a 336-page catalog. (The Ealing Corp.)

For free copy circle No. 3 on postcard, p. 143

Bump Caps

Chemical resistant plastic caps are described in a bulletin. The bump caps are very light in weight. (Mine Safety Appliance Co.)

For free copy circle No. 4 on postcard, p. 143

Manganese Alloys

Composition and uses of ferromanganese briquettes and silicomanganese alloys and briquettes are covered in a leaflet. (Vanadium Corp. of America.)

For free copy circle No. 5 on postcard, p. 143

Heat-resist Paint

How to pick the right heat-resistant paint for a particular job is told in a 4-page brochure. (Paint Sales Div., Joseph Dixon Crucible Co.)

For free copy circle No. 6 on postcard, p. 143

IT'S HUSSEY COPPER
IN AMERICA'S NEWEST ATOMIC POWERED SUBMARINES

The Triton, the largest submarine ever launched in America, carries the dependability of Hussey Copper on its vital missions. Chosen for its quality and easy workability, Hussey Copper was used in construction of the cooling coils for food storage refrigeration on this ship and the Skipjack. Experienced fabricators and sheet metal workers everywhere have learned that where copper counts most —use Hussey Copper. There's a Hussey Copper warehouse near you, or prompt service direct from the mill.

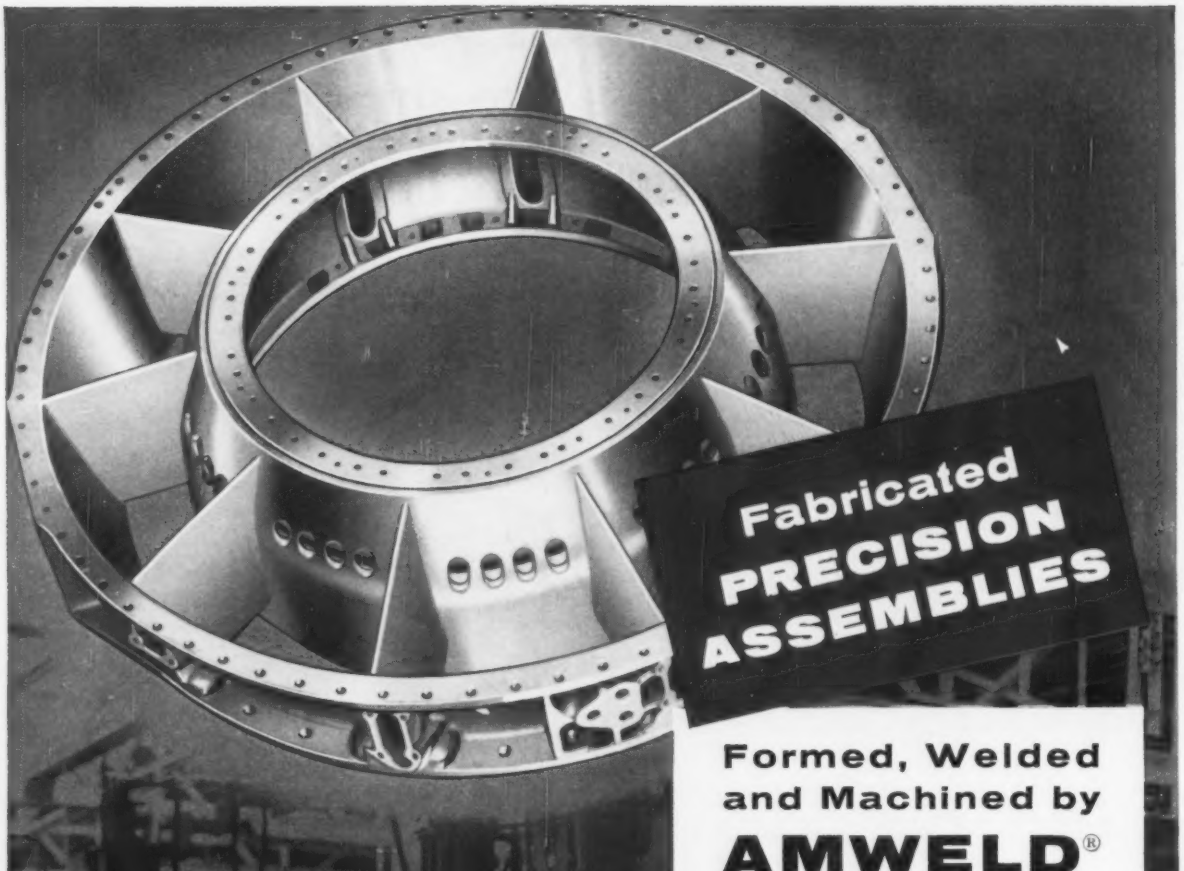
DATA

Submarine Triton, launched August 19, 1958, 447 feet
5,900 tons displacement
Built by General Dynamics Corporation, Electric Boat Division, Groton, Conn.
Refrigeration Cooling Coils
"Krack" Refrigeration Appliances, Inc.

Where Copper Counts Most It's HUSSEY COPPER

Since 1838 HUSSEY COPPER / BRASS

C. G. HUSSEY & COMPANY
(Division of Copper Range Co.)
ROLLING MILLS AND GENERAL OFFICES
PITTSBURGH 19, PA.

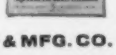


Fabricated PRECISION ASSEMBLIES

Formed, Welded and Machined by AMWELD®

An important segment of Amweld's subcontract work for the aircraft industry, and more recently for missile use, has been the production of welded precision assemblies. Special skills and techniques have been developed for forming, welding, and machining components . . . particularly those involving aluminum, titanium, stainless and similar heat-resistant alloys.

These special skills and facilities are available for subcontracting or experimental work. If you would like to obtain complete information on the capabilities of American Welding and how we can be of assistance to you — phone or write today. Our local representative will be happy to call and discuss your requirements.



Write for complete information.
NEW 20-page catalog of Amweld Rings, Bands, and Welded Assemblies.
NEW booklet entitled, "HOW AMWELD FLASH BUTT-WELDED RINGS ARE PRODUCED."

THE AMERICAN WELDING & MFG. CO.
120 Dietz Road • Warren, Ohio

AMERICAN WELDING

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Technical Drawings

A 16-page presentation gives why of Westinghouse's decision to automate engineering drawing production. It details methods used and their applicability to both small and large firms. (The Filmsort Co.)

For free copy circle No. 7 on postcard

Power Transmission

An 8-page catalog presents a line of sheaves, variable-pitch sheaves, V-belts, flat-belt pulleys, pillow blocks, flange units, take-up bearings, couplings and timing-belt drives. (T. B. Wood's Sons Co.)

For Free copy circle No. 8 on postcard

Aluminum Forging

The world's largest and most versatile aluminum forging facilities are described in a 36-page booklet. (Aluminum Co. of America)

For free copy circle No. 9 on postcard

Tantalum

High-purity tantalum for electronic, nuclear, chemical and missile uses is discussed in a 4-page brochure. It describes forms in which it's available. (National Research Corp.)

For free copy circle No. 10 on postcard

Standard Parts

Better products for automation through standardization is the theme of a 32-page booklet. It contains pictures, engineering drawings and data on precision gears and allied components. Subjects discussed include: "tooth to tooth error," burrs, pin hubs, clamp-type and hubless gears, stainless steel vs nylon, pitch ranges, backlash, worm and wheel drives, etc. (PIC Design Corp.)

For free copy circle No. 11 on postcard

Silicones

What silicones best meet needs of very many problems are described in a 16-page guide. It covers items from adhesives to release agents, resins to rubbers, dielectrics to water repellents. (Dow Corning Corp.)

For free copy circle No. 12 on postcard

Seamless Tube

A decimal equivalent chart has fractional units from 1/64 to 1 in., and—of course—their decimal equivalents. (Ohio Seamless Tube Div.)

For free copy circle No. 13 on postcard

Tiny Battery

Button cell batteries are covered in a 4-page brochure. The nickel cadmium batteries include types from 100 mah to 1750 mah capacities in more than 50 sizes and voltages. (Gulton Industries, Inc.)

For free copy circle No. 14 on postcard

Ductile Iron

A 28-page booklet describes new cast ductile irons that combine high strength and toughness with outstanding resistance to heat, wear and corrosion. (International Nickel Co.)

For free copy circle No. 15 on postcard

Thread Rolling

Recently revised, a 30-page bulletin gives instructions for use of a company's thread rolling attachments. It also covers repair parts. (Landis Machine Co.)

For free copy circle No. 16 on postcard

Comparators

Accuracy, high reliability and stability are features of new transistorized comparators. They measure in thousandths or even millionths. Gage pressure is light, won't hurt

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. **2/19/59**

Circle numbers for Free Technical Literature, Design Digest, or New Equipment:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110

If you want more details on products advertised in this issue fill in below:

Page .....Product .....

Page .....Product .....

Page .....Product .....

PLEASE TYPE OR PRINT

Name .....

Title .....

Company .....

Co. Address .....

.....

City .....Zone ....State .....

FIRST CLASS
PERMIT No. 36
NEW YORK, N. Y.

BUSINESS REPLY CARD
No postage necessary if mailed in the United States

POSTAGE WILL BE PAID BY

THE IRON AGE
Post Office Box 77, Village Station
NEW YORK 14, N. Y.

FIRST CLASS
PERMIT No. 36
NEW YORK, N. Y.

BUSINESS REPLY CARD

No postage necessary if mailed in the United States

POSTAGE WILL BE PAID BY

THE IRON AGE

Post Office Box 77, Village Station

NEW YORK 14, N. Y.

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. **2/19/59**

Circle numbers for Free Technical Literature, Design Digest, or New Equipment:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110

If you want more details on products advertised in this issue fill in below:

Page ..... Product .....

Page ..... Product .....

Page ..... Product .....

PLEASE TYPE OR PRINT

Name .....

Title .....

Company .....

Co. Address .....

.....

City .....Zone ....State .....

FREE LITERATURE

work surfaces. A 4-page bulletin gives details. (Pratt & Whitney Co., Inc.)

For free copy circle No. 17 on postcard

Press Scrap

Got scrap disposal worries? A 16-page brochure shows systems which may remove both scrap and your problems. It covers conveyors which remove chips and scraps from presses, machine tools. (PRAB Conveyors, Inc.)

For free copy circle No. 18 on postcard

Straddle Carrier

Advanced design features of a straddle truck carrier described in a brochure include: high power, good maneuverability, smooth ride, operator comfort, and 30,000-lb capacity. (Hyster Co.)

For free copy circle No. 19 on postcard

Fabrication

Manufacturers looking for a fabrication job shop can now get an 8-page folder showing facilities of a skilled subcontractor. This company, it shows, can handle a variety of diversified fabrication jobs. (Smithcraft Fabrication Div.)

For free copy circle No. 20 on postcard

Flexible Couplings

Standard and special bonded rubber flexible couplings are featured in a 6-page bulletin. (Lord Mfg Co.)

For free copy circle No. 21 on postcard

Hastelloy C

Corrosion-resistant Hastelloy C alloy is the subject of a 16-page booklet. Latest data appears on chemical, physical, and mechanical properties. (Haynes Stellite Co.)

For free copy circle No. 22 on postcard

Data Processing

Functions of Univac data processing equipment are shown in a brochure. It explains various methods, using punch cards, perforated paper tape or magnetic tape. In layman's language, it discusses: card punching, verifying, interpreting, reproducing, tag converting, tape perforating, tape processing. (Remington Rand Div., Sperry Rand Corp.)

For free copy circle No. 23 on postcard

Fork Lift Drive

Information on a new power drive for fork lift trucks, is available in a 12-page booklet. Lift trucks using the drive need only simple heel or toe pressure to control all lift movement. (Towmotor Corp.)

For free copy circle No. 24 on postcard

Foundry Briquettes

Briquetted alloys for iron foundries are described in a leaflet. They include: ferrochromium, ferromanganese, silicomanganese and ferrosilicon. (Vanadium Corp. of America).

For free copy circle No. 25 on postcard

Custom Forging

Facilities and products of a custom-die forging manufacturer are presented in a 24-page brochure. (Park Drop Forge Co.)

For free copy circle No. 26 on postcard

Fasteners

In eight pages, a bulletin describes a complete line of standard precision fasteners. These include: socket screw products, pressure plugs, locknuts, spring pins, dowel pins and steel collars. (Standard Pressed Steel Co.)

For free copy circle No. 27 on postcard

Pressure Gages

Pressure instruments covered in five data sheets have corrosion-proof glass fiber cases. Units indicate record control transmit. (Fischer & Porter Co.)

For free copy circle No. 28 on postcard

No-corrode Fans

Two new bulletins present different corrosion-proof rigid plastic fans. Sizes range from 10½ to 48 in. (Atlas Mineral Products Co.)

For free copy circle No. 29 on postcard

New ALLEN-BRADLEY OILTIGHT PRESSURE SWITCHES

Bulletin 836 Type T

Both operating pressure and differential are adjustable on these new A-B oiltight pressure switches. Operating pressure is externally adjustable, and setting shows on calibrated scale. A trip indicator shows operating point.

For machine tool hydraulic systems—operating at pressures up to 5,000 psi

Especially designed for heavy duty industrial applications, these new Allen-Bradley oiltight high pressure switches assure long, trouble free life. The attractive die-cast aluminum enclosure is completely sealed to exclude oil and water. The snap-action switch mechanism maintains its high contact pressure to the point of switchover—no matter how slowly it is approached. Contact chatter is eliminated—trouble free contact life is increased. The contact block has two isolated circuits with one N.O. and one N.C. set of contacts.

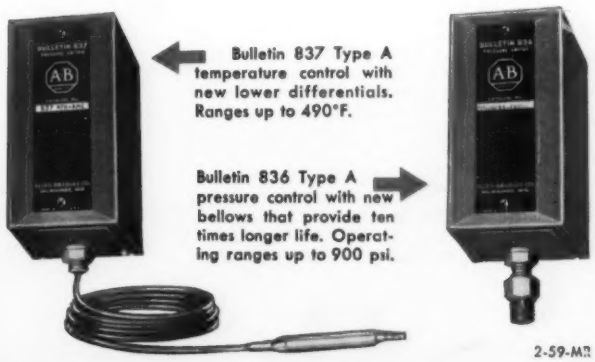
Send for complete information on this newest addition to Allen-Bradley's wide line of *quality* pilot controls.

Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis.
In Canada: Allen-Bradley Canada Ltd., Galt, Ont.

ALLEN-BRADLEY
MOTOR CONTROL
QUALITY

Internal view of piston design used on units for systems above 500 psi. Bellows type construction is used up to 500 psi.

Also...A New Line of Pressure and Temperature Controls with Lower Differentials



Bulletin 837 Type A temperature control with new lower differentials. Ranges up to 490°F.

Bulletin 836 Type A pressure control with new bellows that provide ten times longer life. Operating ranges up to 900 psi.

2-59-MR

Allen-Bradley is not satisfied until Limit Switch Life runs into

MANY MILLIONS OF OPERATIONS

Allen-Bradley Bulletin 800T oiltight limit switches on typical life tests have run many millions of operations. Write for complete information on the Allen-Bradley line of quality limit switches for every industrial application.

Here are some new—and some old—Allen-Bradley oiltight limit switches—all built to give you extra millions of trouble free operations. Their switch bodies and operating heads are both sealed. Oil, dirt, and metal chips cannot enter and foul the contacts or cause sluggish operation of the momentary contact mechanism. Double break, silver alloy contacts never need maintenance. The snap action switch is positive insurance against any reduction of the contact pressure as the "trip point" is approached. This means less chance for chatter and arcing of relays, contactors, or starters operated by the limit switch—and prolonged trouble free contact life for the limit switch itself.

The Allen-Bradley line of limit switches is complete. Illustrated are only a few variations.

Side Push Rod

Adjustable Rod

Top Push Rod with Plastic Window

Adjustable Roller Lever

Wobble Stick Type

Roller Lever for Flush Mounting

Fork Lever Type

Neutral Position Momentary Contact Limit Switch. One set of contacts is closed for each direction of operation.

Side Push Roller

Roller Lever for Manifold Mounting

Side Push Rod Maintained Contact

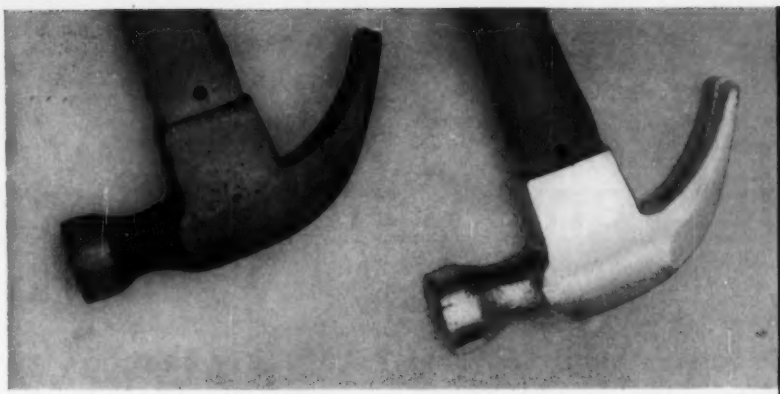
2-59-RM

ALLEN-BRADLEY

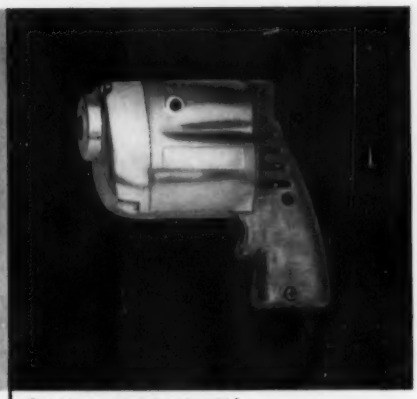
MOTOR CONTROL

QUALITY

Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis.
In Canada: Allen-Bradley Canada Ltd., Galt, Ont.

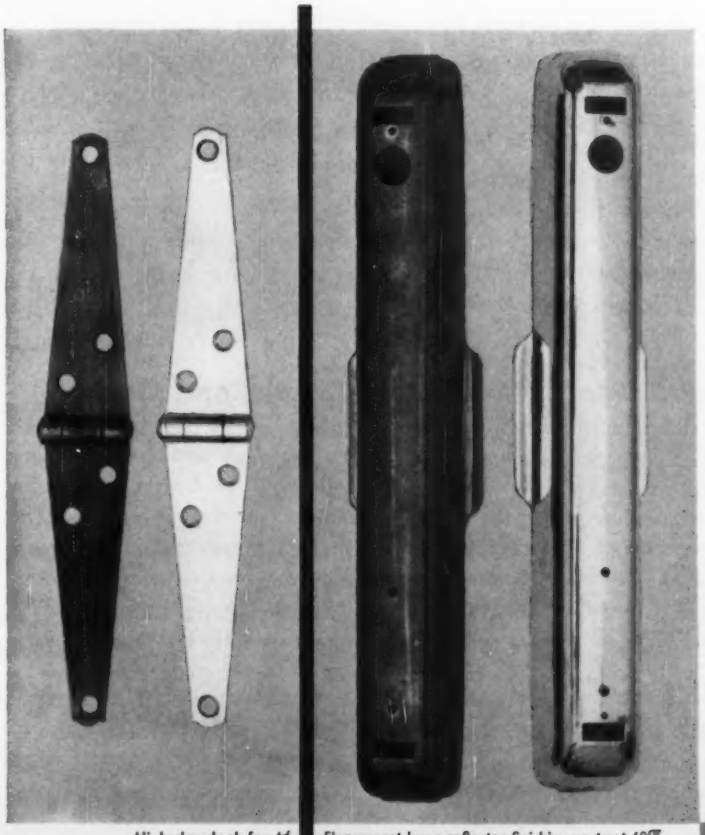


Shelf appeal can be increased for only 3¢



Finishing costs reduced to 12¢

If It Looks Good... It Sells Better



High class look for 4¢

Fluorescent lamp reflector finishing cost cut 62%

If you're looking for a way to increase the sales appeal of your products by adding a quality appearance at low cost, you should investigate vacuum coating.

While this modern process is not a cure-all, most likely you'll find it will add new life to the items you manufacture — and may cut your costs spectacularly, too! Brilliant, eye-catching, metallic finishes, in a wide range of colors, can be applied on plastics, metals, wood, glass, paper, fabrics and many other materials. Today's vacuum coatings are brighter than buffed and polished electroplating, cost less, and in some applications stand up better.

You don't have to take chances, either. Send us a sample of your product and give us details about its use. We'll tell you whether your application is a good one, show you how your product will look, and estimate your costs. Then, if you want, we'll supply a complete installation, guarantee its output, show you how to run it efficiently, and even train your operators. Write us today!

A Subsidiary of National Research Corporation

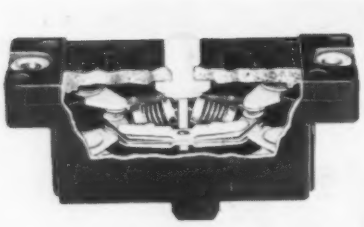
DEPT. 35-B, CHARLEMONT ST., NEWTON, MASS.

NRC

NRC

EQUIPMENT CORPORATION

New Materials and Components



Precision Limit Switches Take Heavy Beating

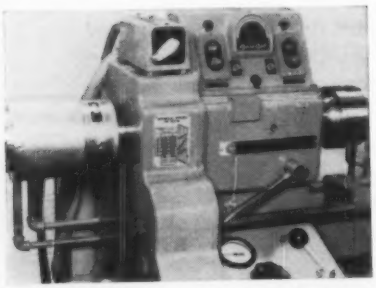
Designed for uses where millions of operations are common, new precision limit switches feature a unique contact mechanism. This not only gives long electrical and mechanical life, but makes the switch work better too. The small heavy-duty units have a movable contact assembly with two compressed coil springs; these provide a quick make and break action. Case is of rugged molded phenolic. Rating is 600 v. (Cutler-Hammer, Inc.)

For more data circle No. 30 on postcard, p. 143

Low-height Locknut Fits 160,000-psi Fasteners

Low in height, this self-locking nut is designed especially for 160,000-psi short-thread screws and bolts. Weighing some 20 to 42 pct less than its supplier's previously available comparable locknuts, the new nuts use wrenches two sizes smaller than standard AN and NAS nuts. This allows using narrower flanges. It lets the bolt get closer to the load centerline. The nuts complement new high-tensile NAS short-thread fasteners. In addition, the locknut also comes in A286 corrosion-resistant steel for 900°F service. (Kaynar Mfg. Co., Inc.)

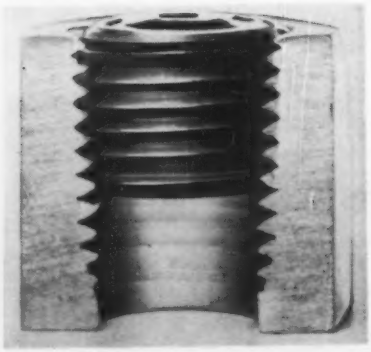
For more data circle No. 31 on postcard, p. 143



Power Actuator Works Air Chucks and Collets

For working machine tool chucks or collets, this chuck actuator eliminates necessity of a rotating union. It supplies power for holding either bar or chucking work. Air leaks and vibration are nil. The actuator adapts to automated setups; combining it with automatic handling units can eliminate an operator. The actuator is a nonrotating air or hydraulic cylinder mounted on ball bearings. The cylinder's thrust transmits through the bearings to the machine's rotating spindle. (Power Grip, Inc.)

For more data circle No. 32 on postcard, p. 143



Pressure Plugs Sit Flush With Base Material

Now commercially available are flush-seating pressure plugs. When installed in hydraulic, pneumatic or other pressure systems, these hex socket plugs seat virtually level with the material into which they're threaded. Each plug provides a leak-proof seal since it has a different taper from that of the tapped hole. Even under high pressure, it won't leak. Main advantages of the plugs are two: (1) they permit smaller design clearances on equipment; (2) they eliminate hazards of protruding plugs. Still another asset is improved appearance. The plug seats flush within half a pitch (or turn of thread). Standard sizes available: 1/16 to 1¼ in. (Standard Pressed Steel Co.)

For more data circle No. 33 on postcard, p. 143

How the purity of Electromanganese® eliminates steel-making "bargains" that cost money

In theory few metallurgists will argue that pure Electromanganese® makes a better steel additive than manganese alloys that are contaminated with elements detrimental to the finished product.

In practice, however, metallurgists may frequently choose alloys that contain the manganese they want as well as elements they don't want, can't use, and would be better off without! *Their reason*: it's cheaper! *Their problem*: getting rid of the undesirable elements . . . if they can. *The result*: for the most part, adequate but less-than-the-best quality in the finished product.

But let's take a *good* look at the price tag. Are contaminated manganese alloys really cheaper than the pure element? Today's cost difference between other manganese alloys and pure Electromanganese is only a few pennies. This small differential is easily overcome. For example, commercial use of carbon- and silicon-free Electromanganese in low carbon aluminum killed sheet steel shows potential economic and quality advantages in the following areas:

1. Improved furnace and deoxidation practice
2. Improved deep drawing characteristics
3. Improved sheet quality; i.e., fewer surface rejections

RESULT: better quality at lower cost for you and your customers.

When you buy Electromanganese—Foote's electrolytic manganese, guaranteed 99.9% pure—you improve steel quality, cut down rejects, and end up with real dollars-and-cents savings. A Foote engineering representative is ready to tell you about actual case histories in other plants . . . help you work out what you might expect in your own. Until then, Bulletin 201 will give you more details on Electromanganese, the special Hydrogen-Removed Grade (H:7.5ppm), and Nitrided Grades.

Write Technical Literature Department, Foote Mineral Co., 438 Eighteen West Chelten Building, Philadelphia 44, Pa.

FOOTE MINERAL COMPANY

Electrolytic Manganese Metal • Nitrelmang • Hydrogen-Removed Electromanganese • Nickel • Rimex Manganese Sulphide • Welding Grade Ferro Alloys • Commercial Minerals and Ores • Lithium Metal, Chemicals, Minerals • Zirconium, Titanium, Hafnium (Iodide Process)

Gold Plating

A new gold electroplating process features simplicity and stability of the plating bath. Deposits show extreme hardness and wear resistance. Because of its hardness users find it possible to use thinner deposits without impairing end product quality. Some users produce dense, compact, lustrous ductile electroplating as heavy as 0.008 in. that shows excellent adhesion to the base metal. (Lea-Ronal, Inc.)

For more data circle No. 34 on postcard, p. 143

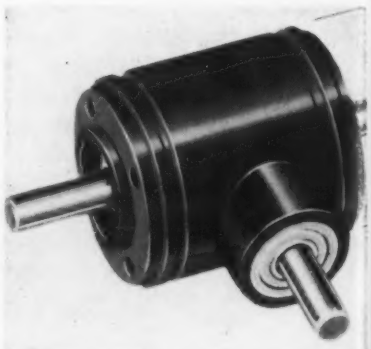
Plastic Cylinders

Graduated cylinders are being molded from polypropylene for high temperature service. The cylinders have great clarity. They come in six sizes from 25 ml to and including 1000 ml. The cylinders are chemically inert to practically all reagents at high temperatures and to most solvents at room temperature. (American Agile Corp.)

For more data circle No. 35 on postcard, p. 143

Angle T-drives

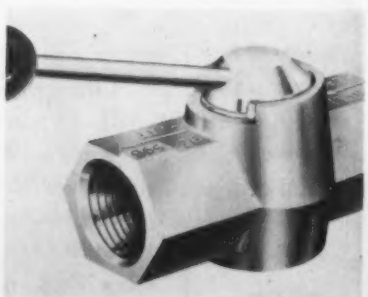
Angle and T-drives in a new series offer advantages where power must transmit at right angles in cramped space. These 1-to-1 ratio units integrally combine with miniature speed reducers, or between two or more such speed reducers, permitting takeoffs with different speed reductions. Drives handle up to 24 oz-in. of torque. Speeds to 10,000 rpm are reached without excessive wear. Maximum power transmitted is 0.025 hp. (Metron Instrument Co.)



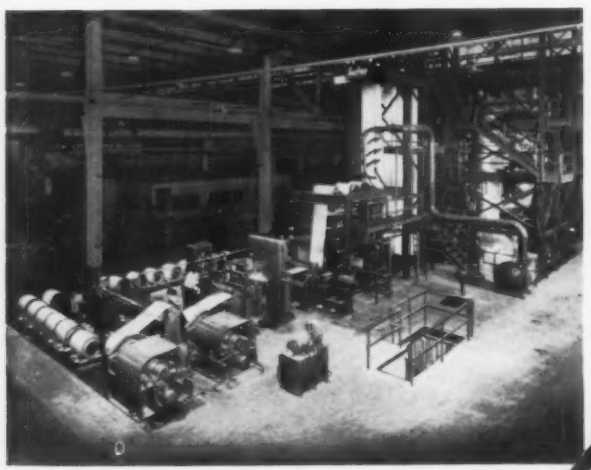
For more data circle No. 36 on postcard, p. 143

No-corrode Valve

For vacuum to 150-psi service, a plug valve works in virtually all non-corrosive liquids or gases. It provides leakproof shut-off. Operated by a handle that effortlessly opens and closes against pressure, the plug uses three "O" rings. These rings eliminate adjusting nuts and springs. They assure long, mainte-



ON *Continuous* HEAT TREAT FURNACES, TOO...



Installation Data
FURNACE:
Made by: Surface Combustion Corporation
Type: For continuous annealing of metal strip in series of vertical passes.
Nominal Rating: 12,000 lbs. per hr. 200 ft. per min.
BLOWERS:
No. and Type: 3 Spencer Turbo-Compressors 2 - 30 H.P.; 3,600 R.P.M. (Used on strip cleaner and de-watering equipment.) 1 - 25 H.P.; 3,600 R.P.M. (On annealing furnace itself.)

DEPENDABLE SPENCER BLOWERS

For continuous heat treatment or batch operation, the prime requirement in a blower is the same: *reliable performance.*

That's why, where *dependable* air delivery is an absolute "must", men who *know* specify SPENCER—for original equipment or replacement.

Simple construction that assures minimum-maintenance operation, constant pressure at varying volumes, mounting that requires no bolting down or special foundations—these are other reasons why metals men prefer SPENCER.

Whatever *your* requirements in blowers—from 1/3 to 1,000 H.P., volumes up to 20,000 CFM, pressures from 4 oz. to 10 lbs., it will pay to check with Spencer.

Request Catalog 126B containing complete specifications.

The SPENCER TURBINE COMPANY
HARTFORD 6, CONNECTICUT

stainless strip—as you like it

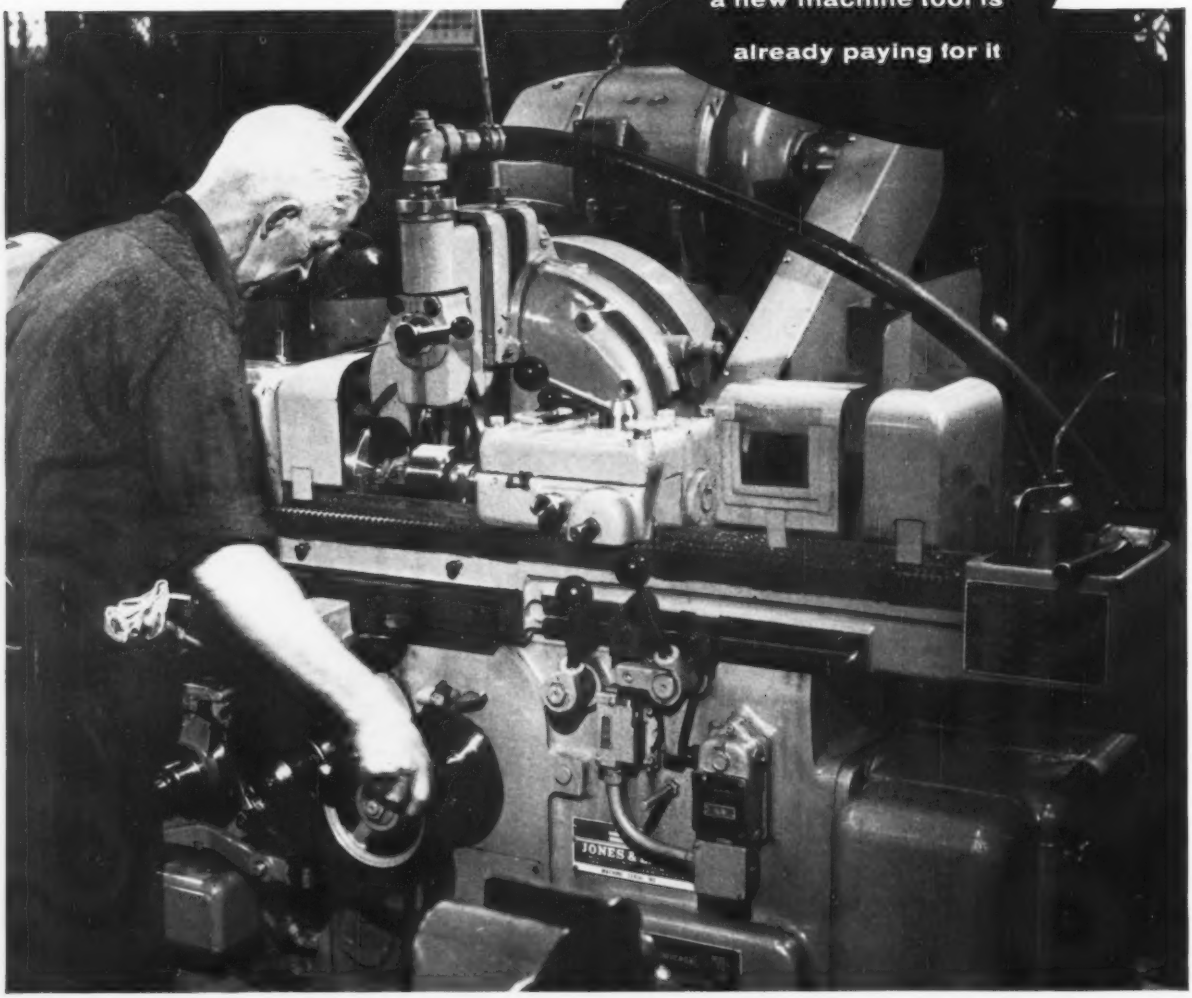
re your requirements for quality and nish in stainless strip being met? As rucible makes it, it's rolled to your pre- ise specifications—and produced with a nish that is truly lustrous. Not only hat, Crucible ensures uniform metallurgical quality by methodically checking each heat—and makes certain of uniform gauge with electronic measuring controls on the most modern rolling equipment. Next time you need stainless, consider Crucible—a major producer of stainless in all gauges down to .010" and in all widths. Write to *Crucible Steel Company of America, Dept. S115, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

CRUCIBLE STEEL COMPANY OF AMERICA

Canadian Distributor — Railway & Power Engineering Corp., Ltd.

JONES & LAMSON MACHINE TOOLS

the man who needs a new machine tool is already paying for it



Close Tolerance Tool Room Work on an Automatic machine with Universal Application

A customer writes: "The versatility of Jones & Lamson Thread Grinders is scarcely tested in the conventional production of hobs, taps, gages and threaded parts. In our toolroom, using the thread grinder as a basis for 'Rube Goldberg' development, we have produced precision racks, small form-profiled milling cutters, oil grooves and grinding wheel crushers.

"While serving the purpose as a necessary piece of equipment, this machine also provides a means by which many additional production problems can be explored and tested. Applying the thread grinder to toolroom problems is putting the best foot forward for quickly producing accurate and dependable shop accessories."

* * *

Write for catalog 600. Jones & Lamson Machine Company, 511 Clinton Street, Springfield, Vermont.

Turret Lathes • Fay Automatic Lathes • Milling & Centering Machines • Thread & Form Grinders • Optical Comparators • Thread Tools

nance-free service life. In brass, the plug valve comes in ⅛, ¼, ½ and ¾-in. sizes; in stainless steel, ¼-in. size. (Circle Seal Products Co.)

For more data circle No. 37 on postcard, p. 143

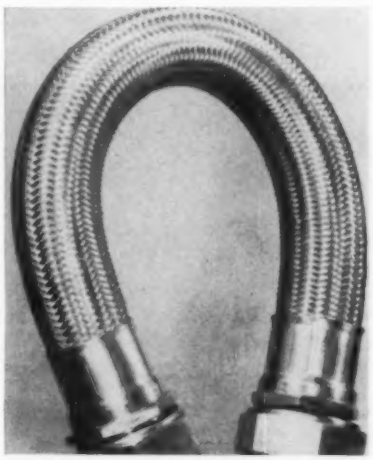
Vacuum Connectors

Vacuum-tight flexible connectors in a new series serve a dual purpose. The connectors isolate vacuum systems from vibration caused by mechanical pumps and other sources. They also speed and ease assembly of these systems. Such connectors fit setups for: refining and fabricating high performance metals, vacuum coating, freeze drying, distillation, evacuation, high altitude simulation, leak testing, etc. Now available in 2 through 6 and 10-in. pipe sizes, each connector consists of a stainless steel bellows and two flanges. The latter flange, in all but the 10-in. size, includes a welded mechanical vacuum sealing surface and a rotatable supporting collar for easy assembly even where hub bolts are different. Both the fixed flange and rotatable collar have standard 150-psi drilling. Connectors can work as low as 10^{-9} mm Hg. They adapt to ultrahigh vacuum systems, too. (NRC Equipment Corp.)

For more data circle No. 38 on postcard, p. 143

Teflon Hose

Finger-flexible Teflon hose meets high-temperature and corrosion-resistant requirements. Braiding the hose insures long life. The hose and hose assemblies have application for live steam, acids, chemicals, and other basic hydraulic and pneumatic conveyance jobs. Temperature range is at least —65 to +400°F. (Titeflex, Inc.)



For more data circle No. 39 on postcard, p. 143

RITCO FORGINGS

. . . best by any test!

Measurably greater accuracy has always been a competitive advantage of Ritco "Bright Finish" Forgings. Made to close-tolerance specifications, these flawlessly finished forgings require minimum machining . . . have smooth, accurate surfaces which speed up assembly, save hours of production time and trouble. Their dense, fibrous structure and controlled grain flow concentrate extra strength and toughness at points of greatest shock and stress . . . assure maximum impact resistance and fatigue strength in key parts.

Prove these advantages to yourself by writing now for complete details on Ritco Forgings. Made in a wide range of metals and alloys, and in many designs.

Ritco also offers complete machining facilities and makes Special Fasteners and Upsets of ferrous and non-ferrous metals. Send us your requirements.

1834 ★ 1959 125th ANNIVERSARY

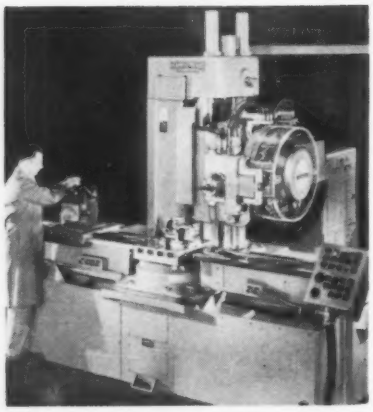
Send us your blueprints now for estimates at no obligation!

RHODE ISLAND TOOL COMPANY

Member Drop Forging Association

144 WEST RIVER STREET • PROVIDENCE 1, R. I.

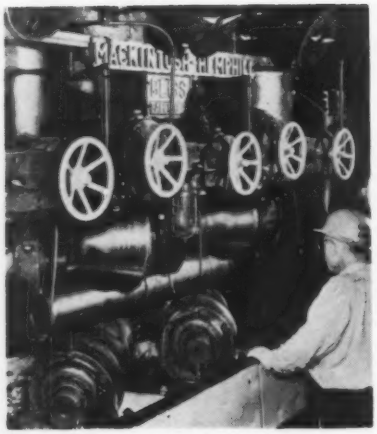
New Equipment and Machinery



Tape-run Setup Offers 961 Different Tools

Calling on any one of 961 different possible tools, the user of this automatic tool-changing, tape run machine has economical, flexible automation even for small-lot work. Equipped with General Electric program controls, the versatile machine tool mills, drills, reams, taps and bores. By reducing setup time, production time, labor costs, and inventory, this machine can pay for itself in one to three years, its maker feels. Production capacity of the machine is very high. By keeping down setup and positioning time and combining milling, drilling, reaming, tapping and boring into one unit, the machine can be kept operating well over 75 pct of the time. Up to 31 tools can load into the machine at one time—30 are in a special revolving tool storage drum, one in the spindle. There are 31 possible combinations of 31 tools. (Kearney & Trecker Corp.)

For more data circle No. 40 on postcard, p. 143



Unit Straightens Pipe at 240-fpm Speeds

This rotary pipe straightener handles from 4½ to 16-in. OD pipe. It straightens and rounds relatively light gage, 0.188-in. wall-thickness pipe to heavy gage, 1½-in. thick wall pipe. Normally run at speeds to keep pace with the operation which precedes it, the huge straightener handles pipe in 50-ft lengths at 240-fpm maximum speed. The unit's three-post construction permits easy access to its three sets of cross rolls. From the machine's front side these rolls can adjust and lock quickly to suit the pipe size exactly. The six cast rolls each measure 20-in. diam. 34-in. long. Outstanding features of the straightener are its massive 85-ton main roll frame and its use of high-angle, gear-type flexible couplings on the spindles. These drive the six rolls from two 100-hp main motors. (Mackintosh-Hemphill Div., E. W. Bliss Co.)

For more data circle No. 41 on postcard, p. 143

Punch Moves To Hard To Handle Work

Portable and hydraulic, this punch puts holes in large or hard to handle pieces. It eliminates awkward material handling and slower, more costly, hole-making methods. Punches come in 5 to 90-ton capacities. The 90-ton unit punches up to a 1 1/16-in. hole through ⅞-in. or 1-in. hole through 1-in. mild steel. A complete punch setup consists of a punch unit with a push-button control box, a hydraulic power unit, and interconnecting flexible hydraulic lines. Punch units come from 5 to 30-ton capacity. They are light weight enough to carry from job to job. Heavier units of 50, 70 and 90-ton capacity have their power unit mounted on a castered cart; the punch unit suspends from a castered tripod. In cases where a tripod cannot be used, the punch head can hang from a crane, hoist, or A-frame. One man can locate and control the setup easily. Operator has full control over start, stop and reverse ram movement which permits jogging. (M. A. Whitney Mfg. Co.)

For more data circle No. 42 on postcard, p. 143

SIMONDS

INDUSTRIAL CUT GEARS

LARGE OR SMALL HEAT TREATED OR PLAIN

SIMONDS has over 60 years' experience in cutting quality industrial gears. We can supply any type of gear in cast or forged steel, gray iron, bronze, Meehanite, rawhide or bakelite in a full range of sizes adaptable to the material. Also heat-treated, case or flame hardened gears of carbon or alloy steel. Send us your requirements for quotation.

Custom

GEAR CUTTING

SIMONDS' facilities can produce any type of custom gear from your blanks if you prefer. Same quality . . . same prompt service.

QUALITY GEARS FOR OVER 65 YEARS

SPUR GEARS
BEVEL GEARS
MITRE GEARS
WORMS WORM GEARS
RACKS PINIONS

Also stock carrying distributors of Ramsey Silent Chain Drives and Couplings; and industrial V-belts.

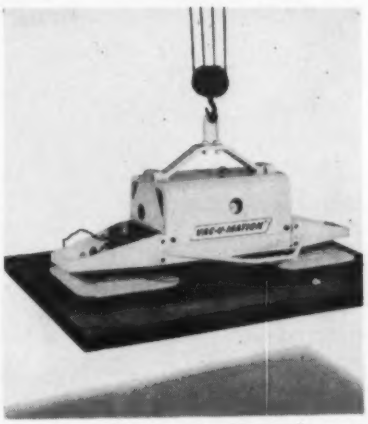
SIMONDS GEARS

THE SIMONDS GEAR & MFG. CO.

LIBERTY at 25TH PITTSBURGH 22, PA.

Vacuum Lifter

Square cup vacuum lifters now available lift and move steel and nonferrous plates. This unit has two 20-in. square vacuum cups, each with 400 sq in. of lifting surface. At 10 psi, each cup has 4000-lb lifting power; with a 4 to 1 safety factor lifting capacity is still 1000-lb. Square cups adapt to 1, 2, 4, and 8-cup vacuum lifts. The vacuum pump is a twin cylinder, high vol-

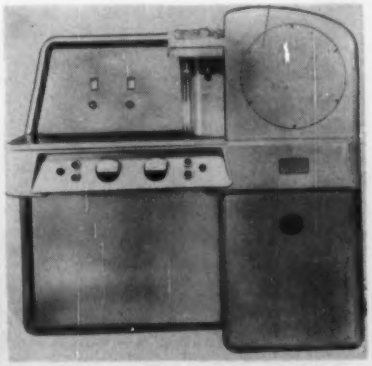


ume, dry piston type. It requires no oil and is capable of maintaining 27 in. of vacuum. Pump displacement is 6.57 cfm. Driving the pump is a ½-hp, 115-v, one phase, 60 cycle motor arranged to run periodically; thus a 20-in. minimum, 25-in. maximum of vacuum is maintained in the reserve tank. Even an electrical failure won't cause the load to drop. (F. J. Littell Machine Co.)

For more data circle No. 43 on postcard, p. 143

X-ray Spectrograph

Recent improvements in this X-ray spectrograph make it possible for an unskilled operator to quickly

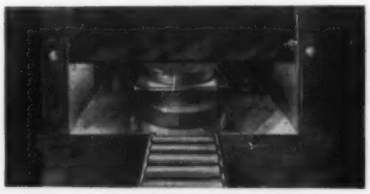


measure elements in any material by merely touching a button. The machine incorporates a universal detector and an automatic crystal changer. These new components eliminate manual operations ocassionally required with earlier models. Now, completely automatic operation is possible throughout a range of 81 elements in the atomic scale from magnesium (No. 12) to uranium (No. 92). The spectrograph consists of two units: main chassis assembly is 54 wide x 56 high x 36-in. deep; programming console is 24 wide x 48 high x 24-in. deep. (Philips Electronics, Inc.)

For more data circle No. 44 on postcard, p. 143

Floor Plates

Floor surfacing armor just announced adds to life of heavy-traffic industrial floors. It consists of 11¾-in. square plates of 0.109-in. (12-gage) hot rolled steel. Each plate has small rectangular holes which contain anchoring prongs



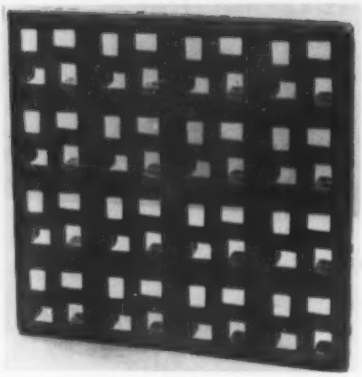
ONLY

OLIVER-FARQUHAR

makes both conveyors and hydraulic or mechanical presses

write The Oliver Corporation
A. B. FARQUHAR DIVISION
York 23, Pennsylvania

that imbed in concrete. Holes also allow a partial concrete surface; thus the finished floor is 76 pct steel, 24 pct concrete. Rounded edges on each plate form flanges that also imbed in concrete, adding rigidity to the plate. The heavy-duty floor plate is similar to the maker's older standard floor plate.

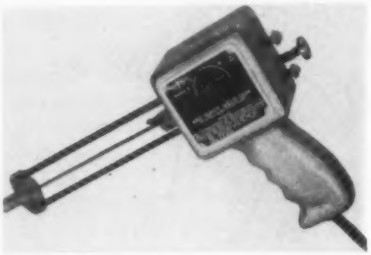


However, the latter consists only of 0.068-in. steel. Main features of both type floor plates are durability, economy and easy installation. (Acme Steel Co.)

For more data circle No. 45 on postcard, p. 143

Welding Gun

Weighing less than 2 lb, this arc-spot welding gun spot welds sheet metal from one side. It requires no back-up electrode. Employing an automatic time control, the gun is

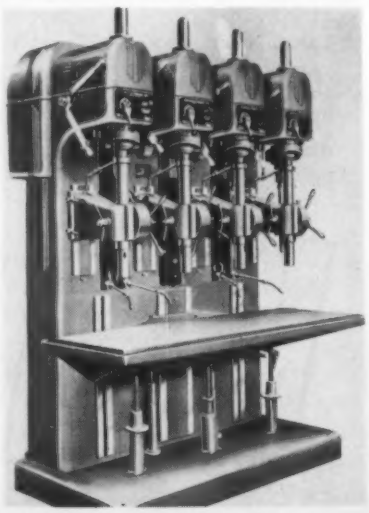


extremely simple to use. There are no triggers or levers to operate during welding. It welds galvanized or mild steel. (Brennen, Bucci & Weber, Inc.)

For more data circle No. 46 on postcard, p. 143

Drilling Machines

Featuring variable speed control, new drilling machines have torque-controlled power feed. Capacities in mild steel of the new units are:

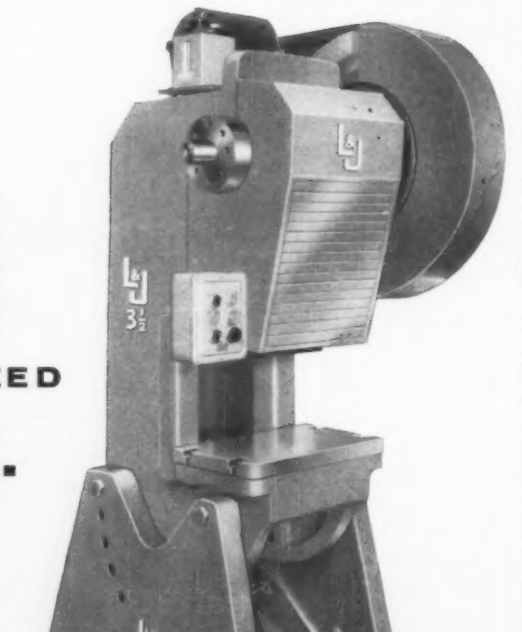


1-in., 1½-in., and 2-in. The power feed consists of an all-geared positive feed with a torque device on the feed shaft. This device is factory set for maximum torque. Overload causes slippage, preventing damage to the machine. Offered in one to

L&J

HIGH SPEED

Multi-Duty Press



OPTIONAL EQUIPMENT

Oil shield. Air clutch. Left or right fly wheel mounting. Variable speed drive. Automatic feed. Automatic misfeed stop. Accurate top stop. Push button or dial speed controls. Electric speed indicator. J.I.C. wiring. Automatic lubrication. Stroke length and shut height to fit the job. Bronze gibs, etc.

- A completely new No. 3½ — 27 ton — punch press that offers many advantages.
- Improved frame design gives greater rigidity for better accuracy and longer die life.
- Fully enclosed for extra safety and cleanliness.
- Speeds to 450 s.p.m. with 1" stroke (2½" standard — 4" maximum to order).
- Efficient at all speeds — on all jobs.
- Readily adaptable to special jobs at low cost.

Straight Side Punch Presses
Single and Double Crank
Versatile, fast for volume production of small parts with large or progressive dies. 20 to 150 tons.

NEW L & J CATALOG with complete specifications and construction features of 23 O.B.I. punch presses in geared and non-geared types from 14 to 90 ton capacities. Also, Straight Side Punch Press. *Write for your copy now.*

L & J PRESS CORPORATION 1623 STERLING AVE. ELKHART, INDIANA

A message to a leading

PROJECT ENGINEER

Would you consider a change—new climate, locale, living conditions — unique challenge, permanency and more than commensurate rewards?

A leading West Coast engineer-contractor is seeking a man of unusual skill and experience. He must have at least 10 years of progressive integrated steel plant development experience. He must know plant layout, construction design, and be of managerial caliber. He will be charged with the continued development of new steel plants and the expansion of existing plants in the U.S. and abroad. His salary will be more than generous.

This man and his family will enjoy indoor-outdoor living in the mild, smog-free San Francisco Bay Area. Here are fine new schools and famous Universities, the culture and sophistication of San Francisco, plus year around recreational opportunities ranging from sea to Sierra and including all sports.

This man will enjoy, too, life insurance, free family health plan, retirement, moving allowance and other perquisites.

Can you qualify? Are you interested? If so, why not write today in strictest confidence to:

ADDRESS BOX G-818
Care *The Iron Age*, Chestnut & 56th Sts., Phila. 39

six spindle models, these hand-scraped, hand-fitted drilling machines are available with standard and special accessories. (Buffalo Forge Co.)

For more data circle No. 47 on postcard, p. 143

Strapping Stretcher

This stretcher is for use in bundling steel bars, round, flats and other non-compressible products of narrow surface. It applies heavy-duty ¾ or 1¼-in. steel strapping.

The stretcher's extra long handle lets it apply heavy tension with relatively little effort. (Signode Steel Strapping Co.)

For more data circle No. 48 on postcard, p. 143

Spray Gun

Air operated, this spray gun provides both dependability and extra fine atomization. The rugged gun is leakproof and solvent-proof. Light in weight, it can be mounted on machines with very little strain put on

support bars. All three hose connections (fluid, atomizing air and control air) are parallel and angle away from the spray area. (Eclipse Air Brush Co.)

For more data circle No. 49 on postcard, p. 143

TUBULAR RIVET COST-SAVINGS MULTIPLY WITH MILFORD'S ASSEMBLY ANALYSIS

1. WE STUDY THE FUNCTION

2. WE DESIGN THE RIGHT PART

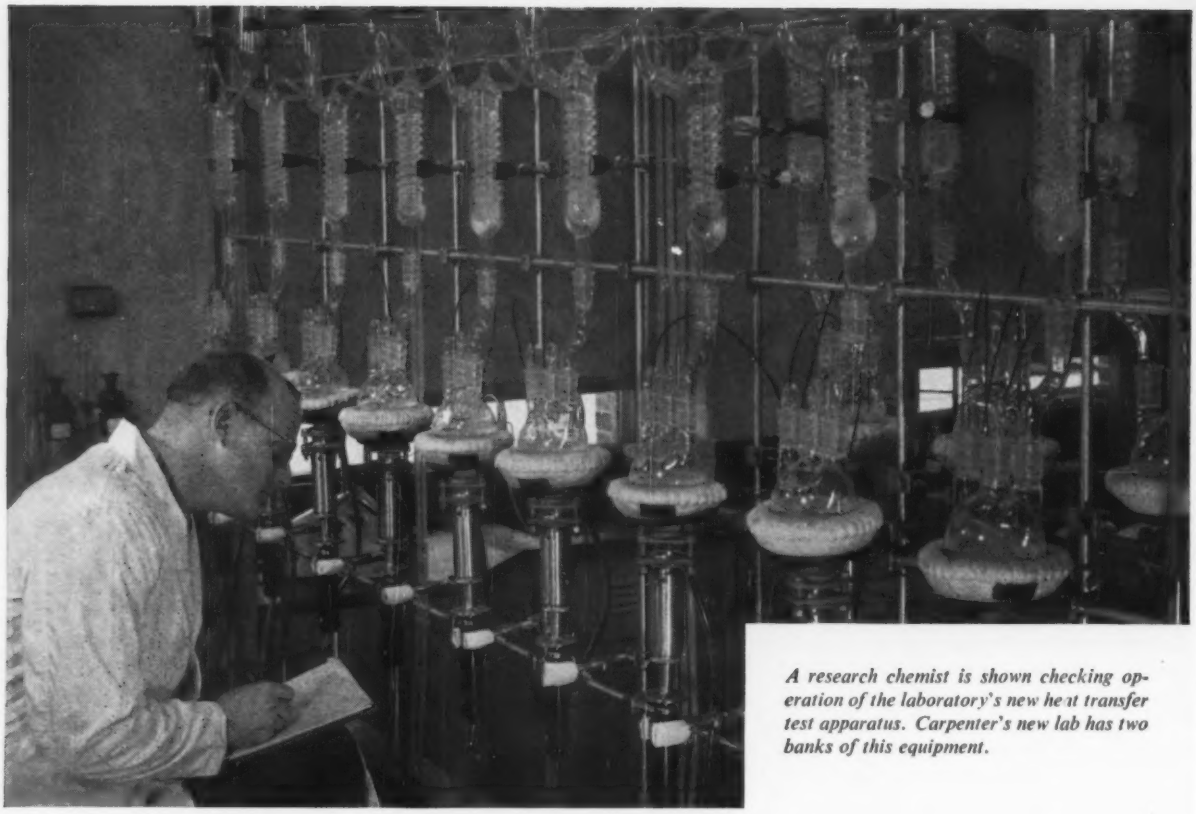
3. WE RECOMMEND THE BEST ASSEMBLY TECHNIQUE

Smart production men know that a cleverly designed product that can't be assembled economically is worse than no product at all! Milford helps with a wealth of assembly tips.

For the answers to assembly problems . . . *get in touch with Milford first!*

THE MILFORD RIVET & MACHINE CO.

MILFORD, CONNECTICUT • HATBORO, PENNA.
ELYRIA, OHIO • AURORA, ILL. • NORWALK, CALIF.



A research chemist is shown checking operation of the laboratory's new heat transfer test apparatus. Carpenter's new lab has two banks of this equipment.

Carpenter's new corrosion laboratory can predict stainless tubing performance on your job

A corrosion engineer makes final adjustments on the new Corrosometer.

This new electro-chemical equipment enables Carpenter to make more thorough study of the behavior of stainless steels and thus gather more background for the development of new and improved alloys.

This new laboratory is considered the largest and best equipped of its kind among companies producing specialty steel exclusively. Heat transfer apparatus, Corrosometer, multi-sample tester, electro-chemical equipment, high pressure, elevated temperature corrosion testing, and stress corrosion cracking equipment give Carpenter the facilities to help solve your corrosion problems and select the right material for any of your needs. Carpenter . . . first in corrosion research . . . first in corrosion control . . . first in stainless tubing and pipe economy. Authorized distributors in over 40 cities, coast to coast. Or write to The Carpenter Steel Company, Alloy Tube Division, Union, N.J.

your master key to cost-saving corrosion control

Stainless Tubing & Pipe

The Iron Age Summary

Inventory Buildup Is Lagging

Some users may be scraping bottom when steel labor contracts expire on June 30.

"Too little, too late" is the way some mills see inventory buildup drive.

■ Some steel users may be scraping the bottom of the inventory barrel when the steel labor contract deadline rolls around next June 30.

"Many customers planned to put their January and February tonnage into stock and nurse it along in case of a strike," asserts one steel executive. "But their own business is building up so fast they can't make much headway. They can very easily end up scraping the bottom of the barrel in June."

Too Little, Too Late—Says another steel sales official:

"There is no possibility of building up enough stock between now and June. The users might get up to 35 pct of a normal inventory accumulated by then through spreading out their orders now. But they are trying to build in three months what it took them a year and a half to work down."

Backlogs Are Rising — These comments point up a dilemma that many metalworking companies failed to anticipate. Fears of a steel strike and the upturn in business have created a situation that is putting a strain on ability of the mills to take care of everybody.

Mill order backlogs are building up so fast that steel sales offices are working overtime to keep pace with the avalanche. The backlog of one large mill has gone up 500,000 tons during the last 30 days.

Warehouses Jammed—The drive to stock up on steel is jamming public warehousing space in the Cleveland area. The available space is being snapped up by automotive and can companies as well as mills that want to store steel outside their own gates.

Another sign of the growing crisis in some steel products: Strip users who normally buy sheet and slit it themselves are starting to buy higher-priced hot- and cold-rolled narrow strip—and are glad to get it. This increases their costs but it helps build inventory.

Planners Surprised — Steel production planners have been caught off guard by the influx of new business. They are rushing furnaces into production because the volume was more than they had bargained for. Meanwhile, shipments are far below the level of incoming orders.

It now looks as though first quarter output will average 78 to 80 pct of capacity. Second quarter could average 85 to 90 pct with the possibility that output late in the quarter could hit close to 100 pct.

Mills this week were scheduled to operate at 86.5 pct of capacity, with output estimated at nearly 2.5 million ingot tons. Last week, the industry operated at 84 pct of capacity and turned out about 2.4 million ingot tons.

Steel Output, Operating Rates

	This Week	Last Week	Month Ago	Year Ago
Production (Net tons, 000 omitted)	2,448	2,378	2,006	1,373
Ingot Index (1947-1949=100)	152.4	148.0	128.6	85.5
Operating Rates				
Chicago	89.0	88.0	86.0	59.0
Pittsburgh	84.0	80.0*	68.5	55.5
Philadelphia	90.0	90.0*	75.0	63.0
Valley	78.5	79.0*	55.0	39.0
West	85.0	85.0*	85.0	72.5
Cleveland	84.0	83.0*	79.0	30.0
Detroit	98.5	95.0*	96.0	51.0
Buffalo	102.0	100.0	71.0	44.0
South Ohio River	99.0	91.0*	81.0	50.0
South	79.0	73.0	71.0	49.5
Upper Ohio River	89.0	83.0*	73.0	60.0
St. Louis	84.5	82.5*	84.0	83.0
Aggregate	86.5	84.0	73.0	50.9

*Revised

Prices At a Glance

(Cents per lb unless otherwise noted)	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	6.196	6.196	6.196	5.967
Pig Iron (gross ton)	$66.41	$66.41	$66.41	$66.49
Scrap No. 1 hvy (Gross ton)	$43.83	$43.83	$41.17	$37.33
No. 2 bundles	$30.33	$30.33	$29.17	$28.83
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	28.10
Copper, electrolytic	30.00	30.00	29.00	25.00
Lead, St. Louis	11.30	11.80	12.80	12.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	102.75	102.125*	99.625	93.625
Zinc, E. St. Louis	11.50	11.50	11.50	10.00

Press Deliveries Moving Out

Sales of heavy, special presses are pacing the market.

But with standard equipment also improving there's a good prospect of shipping advances before long.

■ Press buyers can expect this development soon: Lengthening delivery times for heavy, special presses.

At the moment, builders of presses and press brakes enjoy backlogs which are relatively short. Their backlog averages 60-90 days. But delivery of some presses has extended as much as 60 days in the last month.

Upward Climb — The reason: General press business is improving. Most press manufacturers enjoyed a business increase in January and are experiencing further gains in February.

Most of the additional gain has come in heavy, special equipment. Off-the-shelf models have been moving with fair strength during most of fourth quarter. In first quarter, they should show continued gains.

But the real ground-gainers, in builder order books, are the heavy special presses, which require more work. Both automakers and appliance builders are coming through with orders in unexpected strength. It is certainly no boom, but sales are definitely at a better level than most builders had expected when they planned first quarter work schedules.

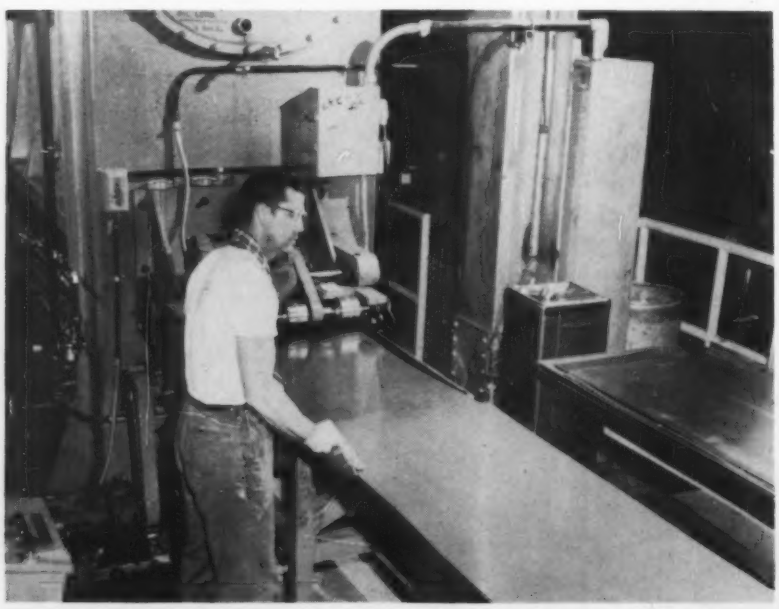
Buyers Wary — This increased business is bound to soak up some of the excess press-building capacity in manufacturer's shops. Careful buyers who really need presses and feel they must have them before the end of second quarter are watching the situation.

Big buyers are specifying quick delivery on special presses. Many automotive orders and appliance orders for presses request April shipment. This is fairly rapid delivery for a piece of heavy special equipment. It means that press builders will have to work hard to meet these deadlines. And this is bound to produce some bottlenecks before the end of first quarter.

Certainly, press builders want orders, could use more of them, and have plenty of off-the-shelf equipment in inventory. But heavy specials will bear watching and the purchasing agent who is shopping for such equipment will do well to watch delivery times carefully.

Planning Payoff—One development born in the recessions of 1954 and 1958 is already paying off. Press builders began diversifying as early as 1954, and evidence of its success is already clear. One builder already has 16 sales for a heavy scrap shear priced at $150,000. Sales thus far have been to scrapyards. But it's a safe bet the unit is under consideration by generators of heavy scrap for work in their own plants. The big shear will slice heavy plate into neat, premium priced scrap.

Expanded production, by most press manufacturers, of light, off-the-shelf equipment began paying off as early as the third quarter. Light presses were one of the first capital equipment items to begin moving well with some sales gains as early as July, 1958.



BETTER MARKET: Improving sales of press equipment are resulting in longer delivery times. (Jones & Laughlin Steel Corp. photo.)

CARBON AND ALLOY STEEL INVENTORIES...

They can and will—if you let *Frasse* stocks be your inventory! Your cost for steel ready for use will be less. You'll save the cost of labor, handling, processing and obsolescence...free plant space and idle capital for profitable use. You incur no expense until material is needed...then only the cost of steel—*not* the purchase price PLUS the *high cost of possession.*

With Frasse stocks as your inventory, you can pick from 20 different grades—any one of 2001 sizes. For, Frasse carries a complete range of carbon bars and shafting as well as commercial and aircraft quality alloys. There's always a size and grade for any application...*immediately available.*

Weigh the advantages of this modern solution to steel inventory problems. You get broad selection, fast deliveries—and the help of specialists that offer a wealth of technical information and problem-solving techniques. Place future orders for the carbon and alloy bars you need with Frasse—*your* Steel Service Center. You'll find it convenient...and far more economical than maintaining your own inventory.

Call FRASSE 1st for

COMPLETE

CARBON AND ALLOY STEEL SERVICE

Frasse Carbon and Alloy Stocks Include:

C1018	C1137	E9310
C1045	C1212	E4130
B1112	C1213	4140
B1113	Ledloy	4142
B1113X	4615	E4340
C1117	8620	E8740

4140 H.T. • 4142 H.T.

Precision Shafting • Special Finish
Turned & Polished Shafting • Drill Rod
4130 Aircraft Quality Sheets

AMERICAN STEEL WAREHOUSE ASS'N
YOUR STEEL SERVICE CENTER

Peter A. Frasse & Co., Inc.

New York 13, N.Y.	Philadelphia 29, Pa.	Buffalo 7, N.Y.	Syracuse 1, N.Y.	Hartford 1, Conn.
17 Grand St.	3911 Wissahickon Ave.	P.O. Box K, Sta. B	P.O. Box 1267	P.O. Box 1949
WAlker 5-2200	BAldwin 9-9900	BEdford 4700	HOward 3-8655	JAckson 9-6861

Buyers Push Efforts To Build Stocks

Mills and distributors find it more and more difficult to fill all orders.

Biggest tie-ups involve sheet and strip. However, demand upsurge now includes most products.

▪ Steel users are redoubling their efforts to build up inventories. And these attempts—often unsuccessful—are putting greater pressure on mills and steel service centers.

"A large number of buyers are trying to jack up their usual orders by 50 to 100 pct," comments a Farwest mill official. "But," he adds, "we are booking tonnages on the basis of a customer's past buying pattern."

Paperwork is piling up in steel sales offices as mills try to divide the available steel fairly and meet delivery dates. The order glut is greatest, of course, in sheet and strip products.

Some sheet mills, for example, are now forced to return orders, saying they can only fill a small part of the tonnage. When this happens the would-be buyers next try the warehouses. Sometimes they canvas the service centers, asking how much of a given order each can fill.

While most of the headaches are piling up in sheet and strip, the market tightening is an across-the-board affair. Bar mills are often on informal quotas for second quarter delivery. Stainless producers are urging buyers to spread out their orders so mills won't be over-taxed.

Sheared mill plate is a sell-out through March, even at East Coast mills. Beyond the first quarter producers say they are "handling space reservations on a day-to-day judgment basis."

Structurals have finally come to life, with stock building an important reason. Producers in most areas report deliveries of standard shapes are extending several weeks.

New Chicago Mill — National Steel Corp. will install new finishing facilities in the Chicago area, at Porter County, Ind. Part of a new $300 million expansion program, the mill will get its hot bands from Great Lakes Steel in Detroit, where ingot capacity will be boosted by 500,000 tons.

Sheet and Strip — Buyers who normally purchase sheet and slit it into strip are now forced to buy higher-priced hot- and cold-rolled strip. Usually they are glad to get it. Most strip capacity is already booked solid through the second quarter at **Chicago.**

Sheet mills there and elsewhere are operating at top capacity. Mills are carefully screening orders, returning some when they can fill only a small percentage of the tonnage. Sheet users are trying to put in enough steel to weather a 4-8 week steel strike. However, many have not succeeded in getting more than a two-week reserve. And in some cases greater steel usage has actually cut sheet inventories below normal levels.

Bars—More hot-rolled bar mills are thinking in terms of quotas for second quarter. There are few, in fact, who are not on "informal allocation" systems for April-June orders.

Republic Steel will begin producing hot-rolled bars next week on its alloy and stainless bar mills at Massillon, Ohio. The mill will turn out sizes in the 5 to 9½ in. diam range.

Cold finished bar production is also on the increase. Automotive ordering is strong.

Reinforcing bars are another product making sales gains. Orders are picking up as construction companies get ready for the building season.

Wire—Manufacturers' wire continues to move strongly, due largely to automotive demand. Mills are carefully reviewing orders on tonnages requiring heat treating to avoid scheduling log-jams. Merchant wire orders should increase next month with more buying by agricultural and construction users.

Stainless—Orders at most mills this month are about twice the January rate. Producers are asking buyers to space out orders if they can. Reason: The mills are reactivating facilities, but want to keep the production step-up orderly. At present stainless mills are operating at about 60 pct of capacity.

Strike Settled — Atlantic Steel Co. and the United Steelworkers have settled a strike which shut down the company's operations for three and a half months. Electric furnaces and mills are again operating. But Atlantic has not reopened its openhearths because electric furnace output meets its mill needs.

PURCHASING AGENT'S CHECKLIST

Industry's opposition to wage, price, and profit controls may be crumbling. **P. 107**

Adhesive helps fabricators convert old tools into new. **P. 111**

Integrated system reduces wire handling costs. **P. 134**

COMPARISON OF PRICES

(Effective Feb. 17, 1959)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

	Feb. 17 1959	Feb. 10 1959	Jan. 20 1959	Feb. 18 1958
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	4.925¢
Cold-rolled sheets	6.275	6.275	6.275	6.05
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.60
Hot-rolled strip	5.10	5.10	5.10	4.925
Cold-rolled strip	7.425	7.425	7.425	7.17
Plate	5.30	5.30	5.30	5.12
Plates, wrought iron	13.55	13.55	13.55	13.15
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.65	$10.65	$10.65	$10.30
Tin plates, electro (0.50 lb.)	9.35	9.35	9.35	9.00
Special coated mfg. ternes	9.90	9.90	9.90	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	5.675¢	5.675¢	5.425¢
Cold finished bar	7.65	7.65	7.65	7.30
Alloy bars	6.725	6.725	6.725	6.475
Structural shapes	5.50	5.50	5.50	5.275
Stainless bars (No. 302)	46.75	46.75	45.00	45.00
Wrought iron bars	14.90	14.90	14.90	14.45
Wire: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	7.65¢
Rails: (per 100 lb.)				
Heavy rails	$5.75	$5.75	$5.75	$5.525
Light rails	6.725	6.725	6.725	6.50
Semifinished Steel: (per net ton)				
Rerolling billets	$80.00	$80.00	$80.00	$77.50
Slabs, rerolling	80.00	80.00	80.00	77.50
Forging billets	99.50	99.50	99.50	96.00
Alloy blooms, billets, slabs	119.00	119.00	119.00	114.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.15¢
Skelp	5.05	5.05	5.05	4.875
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.196¢	6.196¢	5.967¢

	Feb. 17 1959	Feb. 10 1959	Jan. 20 1959	Feb. 18 1958
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.57	$70.57	$70.57	$70.97
Foundry, Southern Cin'ti	73.87	73.87	73.87	73.87
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.07	70.07	70.07	70.47
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese, 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	12.25
Pig Iron Composite: (per gross ton)				
Pig iron	$66.41	$66.41	$66.41	$66.49
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$47.50	$47.50	$45.50	$36.50
No. 1 steel, Phila. area	39.50	39.50	35.50	38.00
No. 1 steel, Chicago	44.50	44.50	42.50	37.50
No. 1 bundles, Detroit	*39.50*	40.50	36.50	29.50
Low phos., Youngstown	49.50	49.50	46.00	38.50
No. 1 mach'y cast, Pittsburgh	51.50	51.50	51.50	49.50
No. 1 mach'y cast, Phila.	56.50	56.50	48.50	47.50
No. 1 mach'y cast, Chicago	57.50	57.50	54.50	49.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$43.83	$43.83	$41.17	$37.33
No. 2 bundles	30.33	30.33	29.17	28.83
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.50-15.50	$14.50-15.50	$14.50	$15.38
Foundry coke, prompt	18.50	18.50	18-18.50	17.50-19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	30.00	30.00	29.00	25.00
Copper, Lake, Conn.	30.00	30.00	29.00	25.00
Tin, Straits, N. Y.	102.75†	102.125*	99.625	93.625
Zinc, East St. Louis	11.50	11.50	11.50	10.00
Lead, St. Louis	*11.30*	11.80	12.80	12.80
Aluminum, virgin ingot	26.80	26.80	26.80	28.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	29.50

† Tentative. ‡ Average. * Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo and Birmingham.

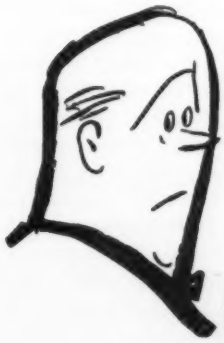
Steel Scrap Composites

Average of No. 1 heavy melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

INDEX TO PRICE PAGES

Prices At a Glance 159
Comparison of Prices 163
Bars 172
Billets, Blooms and Slabs 170
Boiler Tubes 174
Bolts, Nuts, Rivets, Screws 175
Clad Steel 174
Coke 174
Electrical Sheets 174
Electrodes 174
Electroplating Supplies 175
Ferroalloys 177
Iron Ore 175
Merchant Wire Products 174
Metal Powders 175
Nonferrous
- Mill products 169
- Primary Prices 163-168-169
- Remelted Metals 169
- Scrap 169

Piling 170
Pig Iron 176
Pipe and Tubing 173
Plates 172
Rails 174
Refractories 174
Service Center Prices 175
Shapes 170
Sheets 171
Spring Steel 174
Stainless 176
Steel Scrap 164
Strip 170
Structurals 170
Tinplate 171
Tool Steel 174
Track Supplies 174
Water Pipe Index 175
Wire 172
Wire Rod 171



PUZZLED . . .

about personnel problems

Dissatisfied with present recruiting methods? The IRON AGE Employment Exchange is the meeting place for employers and men qualified in all phases of metalworking. For advertising rates, write to Chestnut and 56th Sts., Philadelphia 39.

Old Orders Keep Scrap Moving

Little new business in openhearth scrap has been done in the past week.

The trade is busy filling old orders. For the most part, optimism prevails.

■ The scrap market moved busily along a plateau for the second straight week.

While there has been an abrupt dropoff in new openhearth scrap purchases, few dealers are really worried. Mill operating rates, after all, are still climbing. And dealers have plenty to do filling old orders.

But renewed mill interest in turnings has restrained any wild hopes the trade may have had for a runaway market. Hot metal competition is still to be reckoned with.

New buys of turnings in Pittsburgh and the Midwest are reminders that the mills can and will turn their blast furnaces on full tilt if they have to.

Export activity is moving ahead at a brisk pace on the East Coast, adding strength to prices there.

A general pickup in foundry activity has brought new orders for cast iron scrap. But most of these sales have been at existing price levels.

With no sizable mill buys in the major districts, The IRON AGE No. 1 heavy melting Composite Price is unchanged at $43.83.

Pittsburgh—Prices of openhearth grades are unchanged. Mill buying still lags. The absence of widespread consumer demand has produced greater willingness to sell among dealers, but not at reduced prices. Yards are asking close to $50 for No. 1 heavy melting in tonnage quantities. Direction of next price move depends on whether mills must buy before dealers decide they must sell. Some dealers are concerned that they may miss the market but, at the moment, only small quantities are being offered at reduced prices.

Chicago—Last week, major mills in the district held the price line against higher price demands. This week, the market weakened slightly as smaller mills began probing for soft spots in the price list. Machine shop turnings slipped to $25, factory bundles to $49. Prices of machine shop turnings and mixed borings and turnings were transposed last week. Correct prices were $25-$26 for machine shop turnings and $26-$27 for mixed borings and turnings.

Philadelphia—A lot of business is being done in this market. Export prices have the front of the stage. Foreign orders for openhearth scrap are bringing slightly higher than domestic prices on a delivered basis. Turnings have been sold at $1 to $2 above last week. Cast and malleable are moving at $1 to $2 above previous level.

New York—Blast furnace grades have been pushed up $1 a ton by new buying by mills in an adjacent district. Steel making grades are slow, but prices are holding steady. Pipe foundries are buying cast iron at quoted prices.

Detroit—Dealers believe they may have forced the market a little too fast earlier this month. They've eased the price for No. 1 grades about $1. Expectations are for a fairly strong demand from mills in the next few months, but the pressure to push prices up will be somewhat less.

Cleveland—Dealers are still feeling bullish but mills are holding off. Most mills have been able to match increased steelmaking with hot metal. Factory bundles are expected to barely reach this month's levels. Valley yards are still taking in some distress eastern truck shipments at about $45 delivered.

St. Louis—Steel scrap prices are firm. Material is moving at a moderate rate. Machine shop turnings and cupola cast have been sold at $1 higher than last week's prices. Some railroad items are up as much as $3.50.

Birmingham — Scrap movement in this area continues slow. Settlement of a strike that has kept an Atlanta mill closed since last Oct. 31 has brightened the picture. Principal activity is in cast grades, with prices unchanged.

Cincinnati — Market is showing some mid-month weakness as small dealer tonnages move for less than old orders. Pittsburgh is giving a cold shoulder to offerings of secondary grades.

Buffalo — Prices are unchanged. No new purchases are reported. Meanwhile, dealers are busy filling old orders.

Boston—Prices are holding firm but demand has slowed. Mills are staying out of the market for the time being.

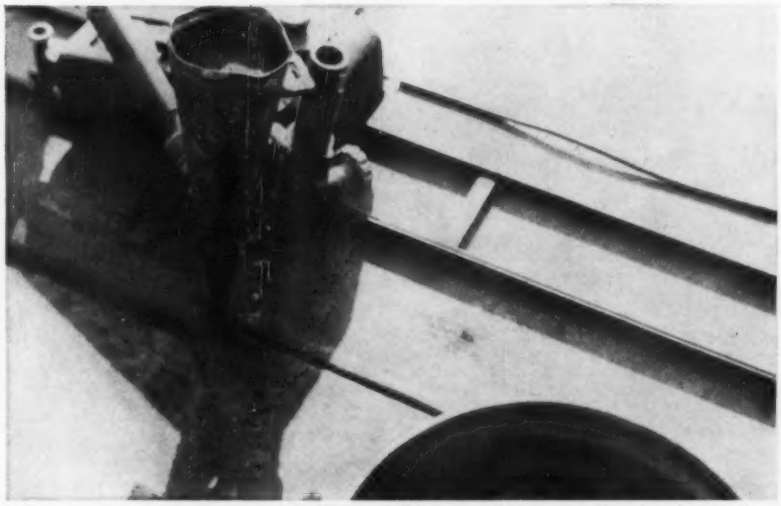
West Coast—There's little life in the scrap market in San Francisco, Los Angeles, and Seattle. Price of cupola cast in Los Angeles is down $3.

Houston—Prices are unchanged and little scrap is moving. An out-of-district mill is attempting to draw material on a springboard basis. New export business is expected within two weeks.

Lincoln

WELDYNAMICS

NEWS ABOUT ARC WELDING AT WORK CUTTING COSTS



A "Squirt" Welder welds heavy plate in 1/4 the time.

WAR AGAINST HIGH COSTS NETS BARGE BUILDER 75% BONUS

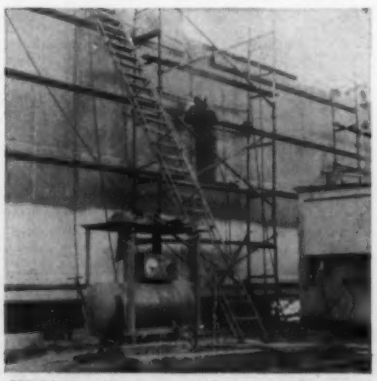
The Wiley Manufacturing Company of Fort Deposit, Maryland, builder of welded barges and large custom built cranes, initiated a cost reduction program that resulted in real savings.

Stanley Welsh, general superintendent, and J. J. Evans, general foreman, faced with ever rising labor costs, decided bold action was necessary if the company was to keep prices competitive. Since welding is the largest single operation in the Wiley yards it was only logical that they should look for a way to reduce welding costs first.

Enlisting the aid of Joe Gulley, a Lincoln welding engineer out of Lincoln's Baltimore office, the Wiley men began a detailed survey of their welding procedures and processes.

Mr. Gulley assisted Mr. Evans and his weldors to analyze the methods and electrodes used for welding sub-assemblies and for joining the sub-assemblies to the main structure. It was found that by positioning the smaller units iron-powder Jetweld electrodes could be used and speed increased considerably.

The jack-pot, though, was won by switching to semi-automatic for welding of heavy plate. By using a Lincoln "Squirt" welder propelled on a gas cutting buggy, Wiley is able to weld heavy plate, up to ¾ inch, in ¼ the arc time previously required to weld it manually.



Welded units form the barge on the ways.

Structural members are fabricated on the ground with Jetweld, then welded into sub-assemblies.

Jack Evans, General Foreman at Wiley, sparked a cost reduction program that succeeded.

Mr. Evans states that these savings are made even greater because very little plate preparation is necessary. Bevel is eliminated in plate up to ½" and weld cleaning is greatly simplified. The resulting welds are better, too, than can be made manually.

The result—a 75% saving in arc time on this operation!

Although no overall cost figures were immediately available, Mr. Evans estimated that they had been able to reduce total welding costs by at least one third.

The LINCOLN ELECTRIC CO.
Dept. 1550, Cleveland 17, Ohio
The World's Largest Manufacturer of Arc Welding Equipment

SCRAP PRICES *(Effective Feb. 17, 1959)*

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$47.00 to $48.00
No. 2 hvy. melting	38.00 to 39.00
No. 1 dealer bundles	47.00 to 48.00
No. 1 factory bundles	53.00 to 54.00
No. 2 bundles	33.00 to 34.00
No. 1 busheling	47.00 to 48.00
Machine shop turn.	26.00 to 27.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Low phos. punch'gs plate	53.00 to 54.00
Heavy turnings	39.00 to 40.00
No. 1 RR hvy. melting	50.00 to 51.00
Scrap rails, random lgth.	55.00 to 56.00
Rails 2 ft and under	58.00 to 59.00
RR specialties	54.00 to 55.00
No. 1 machinery cast.	51.00 to 52.00
Cupola cast.	45.00 to 46.00
Heavy breakable cast.	43.00 to 44.00
Stainless	
18-8 bundles and solids	225.00 to 230.00
18-8 turnings	120.00 to 125.00
430 bundles and solids	125.00 to 130.00
410 turnings	50.00 to 60.00

Chicago

No. 1 hvy. melting	$44.00 to $45.00
No. 2 hvy. melting	38.00 to 39.00
No. 1 dealer bundles	44.00 to 45.00
No. 1 factory bundles	48.00 to 49.00
No. 2 bundles	31.00 to 32.00
No. 1 busheling	44.00 to 45.00
Machine shop turn.	24.00 to 25.00
Mixed bor. and turn.	26.00 to 27.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	26.00 to 27.00
Low phos. forge crops	56.00 to 57.00
Low phos. punch'gs plate, ¼ in. and heavier	52.00 to 53.00
Low phos. 2 ft and under	50.00 to 51.00
No. 1 RR hvy. melting	48.00 to 49.00
Scrap rails, random lgth.	53.00 to 54.00
Rerolling rails	65.00 to 66.00
Rails 2 ft and under	61.00 to 62.00
Angles and splice bars	56.00 to 57.00
RR steel car axles	73.00 to 74.00
RR couplers and knuckles	52.00 to 53.00
No. 1 machinery cast.	57.00 to 58.00
Cupola cast.	50.00 to 51.00
Cast iron wheels	45.00 to 46.00
Malleable	58.00 to 59.00
Stove plate	46.00 to 47.00
Steel car wheels	53.00 to 54.00
Stainless	
18-8 bundles and solids	220.00 to 225.00
18-8 turnings	120.00 to 125.00
430 bundles and solids	120.00 to 125.00
430 turnings	60.00 to 65.00

Philadelphia Area

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	40.00 to 41.00
No. 2 bundles	25.00 to 27.00
No. 1 busheling	40.00 to 41.00
Machine shop turn.	22.00 to 23.00
Mixed bor. short turn.	22.00 to 23.00
Cast iron borings	22.00 to 23.00
Shoveling turnings	26.00 to 27.00
Clean cast. chem. borings	30.00 to 31.00
Low phos. 5 ft and under	43.00 to 44.00
Low phos. 2 ft punch'gs	44.00 to 45.00
Elec. furnace bundles	41.00 to 42.00
Heavy turnings	35.00 to 36.00
RR specialties	45.00 to 46.00
Rails 18 in. and under	59.00 to 60.00
Cupola cast.	40.00 to 42.00
Heavy breakable cast.	42.00 to 43.00
Cast iron car wheels	44.00 to 45.00
Malleable	67.00 to 68.00
No. 1 machinery cast.	49.00 to 50.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$40.00 to $41.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 dealer bundles	40.00 to 41.00
No. 2 bundles	26.00 to 27.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	20.00 to 21.00
Low phos. 18 in. and under	48.00 to 49.00
Rails, random length	50.00 to 51.00
Rails, 18 in. and under	57.00 to 58.00
No. 1 cupola cast.	45.00 to 46.00
Hvy. breakable cast.	40.00 to 41.00
Drop broken cast.	49.00 to 50.00

Youngstown

No. 1 hvy. melting	$47.00 to $48.00
No. 2 hvy. melting	38.00 to 39.00
No. 1 dealer bundles	47.00 to 48.00
No. 2 bundles	32.00 to 33.00
Machine shop. turn.	20.50 to 21.50
Shoveling turnings	20.50 to 21.50
Low phos. plate	49.00 to 50.00

Cleveland

No. 1 hvy. melting	$43.50 to $44.50
No. 2 hvy. melting	35.50 to 36.50
No. 1 dealer bundles	43.50 to 44.50
No. 1 factory bundles	47.00 to 48.00
No. 2 bundles	29.50 to 30.50
No. 1 busheling	43.50 to 44.50
Machine shop turn.	16.50 to 17.50
Mixed bor. and turn.	21.50 to 22.50
Shoveling turnings	21.50 to 22.50
Cast iron borings	21.50 to 22.50
Cut structural & plates, 2 ft & under	51.00 to 52.00
Drop forge flashings	43.50 to 44.50
Low phos. punch'gs plate	44.50 to 45.50
Foundry steel, 2 ft & under	44.00 to 45.00
No. 1 RR hvy. melting	48.00 to 49.00
Rails 2 ft and under	59.00 to 60.00
Rails 18 in. and under	60.00 to 61.00
Steel axle turnings	27.00 to 28.00
Railroad cast.	54.00 to 55.00
No. 1 machinery cast.	52.00 to 53.00
Stove plate	49.00 to 50.00
Malleable	67.00 to 68.00
Stainless	
18-8 bundles	215.00 to 220.00
18-8 turnings	115.00 to 120.00
430 bundles	120.00 to 125.00

Buffalo

No. 1 hvy. melting	$41.00 to $42.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 busheling	41.00 to 42.00
No. 1 dealer bundles	41.00 to 42.00
No. 2 bundles	30.00 to 31.00
Machine shop turn.	19.00 to 20.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	19.00 to 20.00
Low phos. plate	45.00 to 46.00
Structurals and plate 2 ft and under	49.00 to 50.00
Scrap rails, random lgth.	51.00 to 52.00
Rails 2 ft and under	61.00 to 62.00
No. 1 machinery cast.	51.00 to 52.00
No. 1 cupola cast.	47.00 to 48.00

St. Louis

No. 1 hvy. melting	$37.00 to $38.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 dealer bundles	40.00 to 41.00
No. 2 bundles	28.00 to 29.00
Machine shop turn.	19.00 to 20.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	22.00 to 23.00
No. 1 RR hvy. melting	46.00 to 47.00
Rails, random lengths	49.00 to 50.00
Rails, 18 in. and under	54.00 to 55.00
Angles and splice bars	49.00 to 50.00
RR specialties	50.50 to 51.50
Cupola cast.	50.00 to 51.00
Heavy breakable cast.	38.00 to 39.00
Cast iron brake shoes	37.00 to 38.00
Stove plate	45.00 to 46.00
Cast iron car wheels	45.00 to 46.00
Rerolling rails	61.50 to 62.50
Unstripped motor blocks	40.00 to 41.00

Birmingham

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 dealer bundles	33.00 to 34.00
No. 2 bundles	23.00 to 24.00
No. 1 busheling	33.00 to 34.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	14.00 to 15.00
Electric furnace bundles	39.00 to 40.00
Elec. furnace, 3 ft & under	36.00 to 37.00
Bar crops and plate	43.00 to 44.00
Structural and plate, 2 ft.	42.00 to 43.00
No. 1 RR hvy. melting	38.00 to 39.00
Scrap rails, random lgth.	44.00 to 45.00
Rails, 18 in. and under	51.00 to 52.00
Angles and splice bars	44.00 to 45.00
Rerolling rails	56.00 to 57.00
No. 1 cupola cast.	53.00 to 54.00
Stove plate	53.00 to 54.00
Cast iron car wheels	42.00 to 43.00
Unstripped motor blocks	40.00 to 41.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	26.00 to 27.00
No. 2 dealer bundles	20.00 to 21.00
Machine shop turnings	12.00 to 13.00
Mixed bor. and turn.	15.00 to 16.00
Shoveling turnings	16.00 to 17.00
Clean chem. cast. borings	23.00 to 25.00
No. 1 machinery cast.	37.00 to 38.00
Mixed yard cast.	33.00 to 34.00
Heavy breakable cast.	32.00 to 33.00
Stainless	
18-8 prepared solids	190.00 to 195.00
18-8 turnings	80.00 to 85.00
430 prepared solids	75.00 to 80.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$37.00 to $38.00
No. 2 hvy. melting	32.00 to 33.00
No. 1 dealer bundles	39.00 to 40.00
No. 2 bundles	25.00 to 26.00
No. 1 busheling	37.00 to 38.00
Drop forge flashings	36.00 to 37.00
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	17.00 to 18.00
Heavy breakable cast.	36.00 to 37.00
Mixed cupola cast.	43.00 to 44.00
Automotive cast.	48.00 to 49.00
Stainless	
18-8 bundles and solids	210.00 to 215.00
18-8 turnings	100.00 to 105.00
430 bundles and solids	105.00 to 110.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$30.00 to $31.00
No. 2 hvy. melting	24.00 to 25.00
No. 1 dealer bundles	30.00 to 31.00
No. 2 bundles	17.00 to 18.00
No. 1 busheling	30.00 to 31.00
Machine shop turn.	9.00 to 10.00
Shoveling turnings	11.00 to 12.00
Clean cast. chem. borings	18.00 to 19.00
No. 1 machinery cast.	33.00 to 34.00
Mixed cupola cast.	32.00 to 33.00
Heavy breakable cast.	30.00 to 31.00
Stove plate	29.00 to 30.00

San Francisco

No. 1 hvy. melting	$32.00 to $34.00
No. 2 hvy. melting	30.00 to 32.00
No. 1 dealer bundles	28.00 to 30.00
No. 2 bundles	.... 22.00
Machine shop turn.	.... 15.00
Cast iron borings	.... 15.00
No. 1 cupola cast.	44.00 to 45.00

Los Angeles

No. 1 hvy. melting	.... $36.00
No. 2 hvy. melting	.... 34.00
No. 1 dealer bundles	.... 33.00
No. 2 bundles	.... 18.00
Machine shop turn.	.... 15.00
Shoveling turnings	.... 17.00
Cast iron borings	.... 17.00
Elec. furn. 1 ft and under (foundry)	.... 47.00
No. 1 cupola cast.	.... 43.00

Seattle

No. 1 hvy. melting	.... $30.00
No. 2 hvy. melting	.... 28.00
No. 2 bundles	.... 22.00
No. 1 cupola cast.	.... 36.00
Mixed yard cast.	.... 36.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	.... $34.50
No. 2 hvy. melting	.... 30.50
No. 1 dealer bundles	.... 34.50
No. 2 bundles	.... 25.00
Mixed steel scrap	.... 26.50
Bush., new fact., prep'd	.... 34.50
Bush., new fact., unprep'd	.... 28.50
Machine shop turn.	.... 13.00
Short steel turn.	.... 17.00
Mixed bor. and turn.	.... 13.00
Rails, rerolling	.... 37.00
Cast scrap	.... 45.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	.... $35.00
No. 2 hvy. melting	.... 32.00
No. 2 bundles	.... 22.50
Machine shop turn.	.... 15.00
Shoveling turnings	.... 19.00
Cut structural plate 2 ft & under	$44.00 to 45.00
Unstripped motor blocks	31.00 to 32.00
Cupola cast.	43.00 to 44.00
Heavy breakable cast.	26.50 to 27.50

S-E-G-R-E-G-A-T-E-D SCRAP IS WORTH MORE

Rub specimen with emory paper to obtain clean surface. Add a drop of 1:1 nitric acid. If there is no attack the material is stainless steel. Test sample with magnet. If it is definitely non-magnetic it belongs to the 18-8 stainless steel series. Place specimen in a solution of muriatic acid (1 part water, 1 part muriatic acid) at a temperature of 180/190 degrees F. After 5 minutes, Types 302, 304, 305, 316, 317, 321 and 347 will be white, while 303 will have a black smudge. Then place specimen in fresh solution of muriatic acid at the same temperature as before. Types 316 and 317 will show very slight attack in contrast to the others which will have active attack and gas evolution.

Here is how to test for

STAINLESS STEEL TYPES 316 and 317

To achieve the extra corrosion and erosion resistance necessary for a wide range of applications, the basic 18-8 stainless composition was modified by the addition of molybdenum to produce Type 316.

For increased corrosion resistance, Type 317 has been developed which contains a higher chromium and molybdenum content.

These two stainless steels are used in the textile, paper and chemical industries where it is necessary for an alloy to offer maximum protection from the effects of strong sulphates, chlorides, phosphates and reducing acids.

Type 316, which is produced in considerably larger tonnage than Type 317, is also used to combat the damaging effects of salt spray on marine and seacoast construction and in manufacturing areas where harmful industrial fumes are present.

Because of the molybdenum content, it is highly important that Types 316 and 317 are not mixed with other stainless steel scrap.

Our personnel, equipment, experience and strategically located facilities are specifically geared to fulfill present and future needs for dependably segregated scrap. We welcome your inquiry.

Luria Brothers and Company, Inc.

MAIN OFFICE • PHILADELPHIA NATIONAL BANK BUILDING, PHILADELPHIA 7, PENNSYLVANIA

BRANCH OFFICES • BIRMINGHAM, ALA. • BOSTON, MASS. • BUFFALO, N. Y. • CHICAGO, ILLINOIS • CINCINNATI, OHIO • CLEVELAND OHIO, DETROIT, MICHIGAN • HOUSTON, TEXAS • KOKOMO, INDIANA • LEBANON, PENNA. • LOS ANGELES, CAL. • MEMPHIS, TENN. • NEW YORK, N. Y. • PITTSBURGH, PENNA. • PHILADELPHIA, PENNA. • PUEBLO, COLORADO, • READING, PENNA. • ST. LOUIS, MISSOURI • SAN FRANCISCO, CALIF • SEATTLE, WASH. • *In Canada* • MONTREAL, QUEBEC—HAMILTON, ONTARIO

PLANTS • LEBANON, PENNA. • READING, PENNA • MODENA, PENNA. • DETROIT (ECORSE), MICH. • PITTSBURGH, PENNA. • ERIE, PENNA.

IMPORT & EXPORT—LIVINGSTON & SOUTHARD, INC., 99 Park Ave., New York, N. Y. • Cable Address: FORENTRACO

Reynolds Edits Paley On Aluminum

Walter Rice, Reynolds Metals Co., revises the Paley Report on aluminum's future.

He estimates consumption by 1975 in the U. S., and tells where the metal will come from.

▪ An aluminum man played back the Paley Report on the future of his industry, this week. His decision: The tune still sounds good, but the beat drags.

Walter L. Rice, president, Reynolds Mining Co., subsidiary of Reynolds Metals Co., says Mr. Paley, and the U. S. Aluminum producers agree on the future of aluminum. He just believes Mr. Paley was too conservative.

What Is the Paley Report—William S. Paley made his report to the President of the U. S., in 1952, He headed the President's Policy Commission, which probed world minerals situations, particularly in the U.S., and forecast the future, to 1975.

Mr. Rice's first point: The aluminum industry reached the point in its growth in 1956 that Mr. Paley had forecast for 1960.

By 1975, the extent of his forecast, Mr. Paley had figured an annual consumption of aluminum in the U. S. of about 4.5 million tons. Mr. Rice says if our economy doubles, as it very likely will, over 10 million tons of aluminum will be consumed here annually by 1975.

Here's Mr. Rice's version of aluminum's future, in its major markets:

Electrical — Expanding power needs in this country will push the use of aluminum in the electrical industry to about one million tons annually by 1975. In 1955 it was 250,000 tons.

Transportation — Including cars, trucks, aircraft, railroad equipment, and ships, the amount of aluminum used yearly by this industry should surge to 3 million tons by 1975, from the 400,000 tons in 1955.

Construction—Aluminum usage should top 2 million tons annually by the target year from the current half-million tons.

Where will all this additional metal come from? Africa, for one, says Mr. Rice. "The Belgian Congo is potentially the source of the cheapest aluminum in the world because of its tremendous water power resources."

Here's how the Reynolds executive figures it:

Congo Story—The potential of the Congo River is about 25 million kilowatts, which would produce about 12½ million tons of aluminum per year. The power cost would be about 2½ mills per hour at first. This could be cut to about 1½ mills, which would be among the lowest cost in the world.

But this is far from just around the corner. For one thing, it would cost about $5 billion to build such a gigantic hydroelectric facility.

Australia shows promise of having tremendous bauxite reserves. And notable tonnages of ore are being turned up in India, Malaya, Indonesia and some Pacific Islands, points out Mr. Rice. But right now the U. S. industry just can't afford to ship it here.

Ship Ahoy—Mr. Rice's answer: "Larger and more efficient ore ships." He figures even the largest self-unloading bauxite carrier in the world, the S.S. Richard, flagship of the Reynolds fleet, isn't in the league of what we need.

He says: "A 100,000 ton bauxite ship would cost about $2½ to $3 million a year to operate. It could, for example, make eight voyages a year from the Gold Coast of Africa to the U. S. That would be a total payload of 800,000 tons a year, at an average cost of $3 to $4 a ton—or the same cost we now have for transporting material by rail from Pittsburgh to Cleveland."

Copper

On Monday custom smelters moved up ½¢ per lb, to 30.50¢. This is ½¢ over producers' price, but the smelters reported good demand.

Commerce Dept. has again cut U. S. copper off from Russia. They say too much was headed that way.

Tin priced for the week: Feb. 11—102.125; Feb. 12 — holidays; Feb. 13 — 102.00; Feb. 16 — 102.625; Feb. 17—102.75.*

*Estimate.

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum ingot	26.80	26.10	8/1/58
Copper (E)	30.00	29.00	2/3/59
Copper (CS)	30.50	30.00	2/16/59
Copper (L)	30.00	29.00	2/3/59
Lead, St. L.	11.30	11.50	2/11/59
Lead, N. Y.	11.50	12.00	2/11/59
Magnesium ingot	36.00	34.00	8/13/56
Magnesium pig	35.25	33.75	8/13/56
Nickel	74.00	64.50	12/6/58
Titanium sponge	182-182	185-205	11/3/58
Zinc, E. St. L.	11.50	11.00	11/7/58
Zinc, N. Y.	12.00	11.50	11/7/58

ALUMINUM: 99% ingot frt allwd. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colbourne, Canada. ZINC: prime western. Tin: See above; Other primary prices, pg. 169.

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship pt., frt. allowed)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136 .249	250- 3.
1100, 3003	45.7	43.8	42.8	43.3
5052	53.1	48.4	46.9	46.0
6061-0	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6- 8	42.7-44.2	51.1-54.8
12-14	42.7-44.2	52.0-56.5
24-26	43.2-44.7	62.8-67.5
36-38	46.7-49.2	86.9-90.5

Screw Machine Stock—2011-T-3

Size"	¼	⅜-⅝	¾-1	1¼-1½
Price	62.0	61.2	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1.411	$1.884	$2.353	$2.823
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type→ Gage→	.250 3.00	.250- 2.00	.188	.081	.032
AZ31B Stand. Grade	.....	67.9	69.0	77.9	108.1
AZ31B Spec.	.....	93.3	95.7	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade (AZ31C)	69.6	70.7	75.6	89.2
Spec. Grade... (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) ..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	126	106	128
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	120	105	121
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	54.13	.....	51.36	54.32
Brass, Yellow	47.40	47.94	47.34	50.81
Brass, Low	50.13	50.67	50.07	53.44
Brass, R L	51.09	51.63	51.03	54.40
Brass, Naval	52.08	.....	45.89	55.49
Muntz Metal	50.15	.....	45.46	.....
Comm. Bz.	52.14	53.14	52.54	55.66
Mang. Bz.	55.82	.....	49.42	.....
Phos. Bz. 5%	73.82	.....	74.30	.....

Free Cutting Brass Rod 31.99

TITANIUM

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, $6.90-$7.40; alloy, $14.35; Plate, HR, commercially pure, $5.00-$5.75; alloy, $7.75-$8.50. Wire, rolled and/or drawn, commercially pure, $5.50-$6.00; alloy, $8.00-$9.50; Bar, HR or forged, commercially pure, $4.25-$4.65; alloy, $4.25-$7.15; billets, HR, commercially pure, $3.55-$4.10; alloy, $3.55-$5.75.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.45
Calcium, 99.9% small lots ..... $ 4.55
Chromium, 99.8% metallic basis... $ 1.31
Cobalt, 97-99% (per lb).... $1.75 to $1.82
Germanium, per gm, f.o.b. Miami, Okla., refined ..... 35.00 to 42.00
Gold, U. S. Treas., per troy oz.... $35.00
Indium, 99.9%, dollars per troy oz.. $ 2.25
Iridium, dollars per troy oz... $75 to $85
Lithium, 98% ..... $11.00 to $14.00
Magnesium, sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask, f.o.b. New York ..... $218 to $221
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel 69.60
Palladium, dollars per troy oz... $16 to $18
Platinum, dollars per troy oz... $55 to $60
Rhodium ..... $120.00 to $125.00
Silver ingots (¢ per troy oz.)..... 90.375
Thorium, per kg. $43.00
Vanadium ..... $ 3.45
Zirconium sponge ..... $ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
- No. 115 ..... 29.00
- No. 120 ..... 28.00
- No. 123 ..... 27.00

80-10-10 ingot
- No. 305 ..... 33.25
- No. 315 ..... 31.25

88-10-2 ingot
- No. 210 ..... 42.25
- No. 215 ..... 38.00
- No. 245 ..... 33.75

Yellow ingot
- No. 405 ..... 24.00

Manganese bronze
- No. 421 ..... 25.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
- 0.30 copper max. 24.75-25.00
- 0.60 copper max. 24.50-24.75

Piston alloys (No. 122 type)..24.25-25.25
No. 12 alum. (No. 2 grade)....21.50-22.00
108 alloy 22.00-22.50
195 alloy 25.00-26.00
13 alloy (0.60 copper max.)...24.25-24.75
AXS-679 (1 pct zinc) 21.75-22.25

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½% 22.50-23.50
Grade 2—92-95% 21.25-22.25
Grade 3—90-92% 20.25-21.25
Grade 4—85-90% 17.50-18.50

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	26	25¾
Yellow brass	19¾	18
Red brass	23	22¼
Comm. bronze	23⅞	23⅛
Mang. bronze	18⅜	17⅝
Free cutting rod ends.	19¼	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 26½
No. 2 copper wire 25
Light copper 22¾
*Refinery brass 25
Copper bearing material 24
* Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 26½
No. 2 copper wire 25
Light copper 22¾
No. 1 composition 21½
No. 1 comp. turnings 20½
Hvy. yellow brass solids 15¾
Brass pipe 17¼
Radiators 17½

Aluminum

Mixed old cast. ..... 12 —13
Mixed new clips ..... 15 —16
Mixed turnings, dry ..... 13 —14

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire ..... 24 —24½
No. 2 copper wire ..... 22 —22½
Light copper ..... 20 —20½
Auto radiators (unsweated). 14¼—14¾
No. 1 composition ..... 17¾—18¼
No. 1 composition turnings.. 16¾—17¼
Cocks and faucets ..... 14½—15
Clean heavy yellow brass ... 12¾—13¼
Brass pipe ..... 14½—15
New soft brass clippings .... 15 —15½
No. 1 brass rod turnings .... 12½—13

Aluminum

Alum. pistons and struts .... 6 — 6½
Aluminum crankcases ..... 9½—10
1100 (2s) aluminum clippings 13 —13½
Old sheet and utensils ..... 9½—10
Borings and turnings ..... 6 — 6½
Industrial castings ..... 9½—10
2020 (24S) clippings ..... 11 —11½

Zinc

New zinc clippings ..... 4¾— 5¼
Old zinc ..... 3½— 3¾
Zinc routings ..... 2¼— 2½
Old die cast scrap ..... 2 — 2¼

Nickel and Monel

Pure nickel clippings 52-54
Clean nickel turnings 37-40
Nickel anodes 52-54
Nickel rod ends 52-54
New Monel clippings 30-32
Clean Monel turnings 30-32
Old sheet Monel 26-28
Nickel Silver clippings, mixed 18
Nickel silver turnings, mixed 15

Lead

Soft scrap lead ..... 7 — 7¼
Battery plates (dry) ..... 2¼— 2½
Batteries, acid free ..... 2 — 2¼

Miscellaneous

Block tin ..... 75 —76
No. 1 pewter ..... 59 —60
Auto babbitt ..... 39 —40
Mixer common babbitt ..... 9½—10
Solder joints ..... 13¼—13¾
Siphon tops 42
Small foundry type ..... 10½—10¾
Monotype ..... 10½—10¾
Lino. and stereotype ..... 9½— 9¾
Electrotype ..... 8½— 8¾
Hand picked type shells .... 6½— 7
Lino. and stereo. dross ..... 2¾— 3
Electro dross ..... 2¼— 2½

(Effective Feb. 16, 1959)

IRON AGE

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PIL-ING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$119.00 *B3*		5.55 *B3*	8.10 *B3*	5.55 *B5*						
	Buffalo, N. Y.	$80.00 *R3, B3*	$99.50 *R3, B3*	$119.00 *R3, B3*	6.50 *B3*	5.55 *B3*	8.10 *B3*	5.55 *B3*	5.10 *B3, R3*	7.425 *S10, R7*	7.575 *B3*			
	Phila., Pa.									7.875 *P15*				
	Harrison, N. J.													15.55 *C11*
	Conshohocken, Pa.		$104.50 *A2*	$126.00 *A2*					5.15 *A2*		7.575 *A2*			
	New Bedford, Mass.									7.875 *R6*				
	Johnstown, Pa.	$80.00 *B3*	$99.50 *B3*	$119.00 *B3*		5.55 *B3*	8.10 *B3*							
	Boston, Mass.									7.975 *T8*				
	New Haven, Conn.									7.875 *D1*				
	Baltimore, Md.									7.425 *T8*				15.90 *T8*
	Phoenixville, Pa.					5.55 *P2*		5.55 *P2*						
	Sparrows Pt., Md.								5.10 *B3*		7.575 *B3*			
	New Britain, Bridgeport, Wallingford, Conn.			$119.00 *N8*						7.875 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.975 *N7, A5*				15.90 *N7* 15.70 *T8*
MIDDLE WEST	Alton, Ill.								5.30 *L1*					
	Ashland, Ky.								5.10 *A7*		7.575 *A7*			
	Canton-Massillon, Dover, Ohio		$102.00 *R3*	$119.00 *R3,* $114.00 *T5*						7.425 *G4*		10.80 *G4*		
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	$80.00 *U1, R3*	$89.50 *U1, R3,W8*	$119.00 *U1, R3,W8*	6.50 *U1*	5.50 *U1, W8,P13*	8.05 *U1, Y1,W8*	5.50 *U1*	5.10 *W8, N4,A1*	7.525 *A1,T8, M8*	7.575 *W8*		8.40 *W8, S9,13*	15.55 *A1, S9,G4,T8*
	Cleveland, Ohio									7.425 *A5,J3*		10.75 *A5*	8.40 *J3*	
	Detroit, Mich.			$119.00 *R5*					5.10 *G3, M2*	7.425 *M2, S1, D1,P11*	7.575 *G3*	10.80 *S1*		
	Anderson, Ind.									7.425 *G4*				
	Gary, Ind. Harbor, Indiana	$80.00 *U1*	$99.50 *U1*	$119.00 *U1, Y1*		5.50 *U1, I3*	8.05 *U1, J3*	5.50 *I3*	5.10 *U1, I3,Y1*	7.425 *Y1*	7.575 *U1, I3,Y1*	10.90 *Y1*	8.40 *U1, Y1*	
	Sterling, Ill.	$80.00 *N4*				5.50 *N4*	7.75 *N4*	5.50 *N4*	5.20 *N4*					
	Indianapolis, Ind.									7.575 *R5*				15.70 *R5*
	Newport, Ky.								5.10 *A9*				8.40 *A9*	
	Niles, Warren, Ohio Sharon, Pa.		$99.50 *S1, C10*	$119.00 *C10,S1*					5.10 *R3, S1*	7.425 *R3, T4,S1*	7.575 *R3, S1*	10.80 *R3, S1*	8.40 *S1*	15.55 *S1*
	Owensboro, Ky.	$80.00 *G5*	$99.50 *G5*	$119.00 *G5*										
	Pittsburgh, Midland, Butler, Aliquippa, McKeesport, Pa.	$80.00 *U1, P6*	$99.50 *U1, C11,P6*	$119.00 *U1, C11,B7*	6.50 *U1*	5.50 *U1, J3*	8.05 *U1, J3*	5.50 *U1*	5.10 *P6*	7.425 *J3,B4* 7.525 *E3*			8.40 *S9*	15.55 *S9*
	Weirton, Wheeling, Follansbee, W. Va.				6.50 *U1, W3*	5.50 *W3*		5.50 *W3*	5.10 *W3*	7.425 *F3*	7.575 *W3*	10.80 *W3*		
	Youngstown, Ohio	$80.00 *R3*	$99.50 *Y1, C10*	$119.00 *Y1*			8.05 *Y1*		5.10 *U*	7.425 *Y1,R5*	7.575 *U1, Y1*	10.95 *Y1*	8.40 *U1, Y1*	15.55 *R5, Y1*
WEST	Fontana, Cal.	$90.50 *K1*	$109.00 *K1*	$140.00 *K1*		6.30 *K1*	8.85 *K1*	6.45 *K1*	5.825 *K1*	9.20 *K1*				
	Geneva, Utah		$99.50 *C7*			5.50 *C7*	8.05 *C7*							
	Kansas City, Mo.					5.60 *S2*	8.15 *S2*						8.65 *S2*	
	Los Angeles, Torrance, Cal.		$109.00 *B2*	$139.00 *B2*		6.20 *C7, B2*	8.75 *B2*		5.85 *C7, B2*	9.30 *C1,R5*			9.60 *B2*	17.75 *J3*
	Minnequa, Colo.					5.80 *C6*			6.20 *C6*	9.375 *C6*				
	Portland, Ore.					6.25 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$109.00 *B2*			6.15 *B2*	8.70 *B2*		5.85 *C7, B2*					
	Seattle, Wash.		$113.00 *B2*			6.25 *B2*	8.80 *B2*		6.10 *B2*					
SOUTH	Atlanta, Ga.					5.70 *A8*			5.10 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$80.00 *T2*	$99.50 *T2*			5.50 *T2 R3,C16*	8.05 *T2*		5.10 *T2, R3,C16*		7.575 *T2*			
	Houston, Lone Star, Texas		$104.50 *S2*	$124.00 *S2*		5.60 *S2*	8.15 *S2*						8.65 *S2*	

(Effective Feb. 16, 1959)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS								WIRE ROD	TINPLATE†		
		Hot-rolled *18* ga. & hvyr.	Cold-rolled	Galvanized (Hot-dipped)	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* *1.25*-lb. base box	Electro** *0.25*-lb. base box	Holloware Enameling *29* ga.
EAST	Buffalo, N. Y.	5.10 *B3*	6.275 *B3*				7.525 *B3*	9.275 *B3*		6.40 *W6*	† Special coated mfg. terne deduct 35¢ from 1.25-lb. coke base box price, 0.75 lb./0.25 lb. add 55¢. Can-making quality BLACKPLATE 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. **ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb./0.25 lb. add 65¢.		
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	5.15 *A2*	6.325 *A2*				7.575 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.40 *B3*			
	Fairless, Pa.	5.15 *U1*	6.325 *U1*				7.575 *U1*	9.325 *U1*			$10.50 *U1*	$9.20 *U1*	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 *B3*	6.275 *B3*	6.875 *B3*			7.525 *B3*	9.275 *B3*	10.025 *B3*	6.50 *B3*	$10.40 *B3*	$9.10 *B3*	
	Worcester, Mass.									6.70 *A5*			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.60 *L1*			
	Ashland, Ky.	5.10 *A7*		6.875 *A7*	6.775 *A7*		7.525 *A7*						
	Canton-Massillon, Dover, Ohio			6.875 *R1, R3*									
	Chicago, Joliet, Ill.	5.10 *W8, A1*					7.525 *U1, W8*			6.40 *A5, R3,W8*			
	Sterling, Ill.									6.50 *N4, K2*			
	Cleveland, Ohio	5.10 *R3, J3*	6.275 *R3, J3*	7.65 *R3**	6.775 *R3*		7.525 *R3, J3*	9.275 *R3, J3*		6.40 *A5*			
	Detroit, Mich.	5.10 *G3, M2*	6.275 *G3, M2*				7.525 *G3*	9.275 *G3*					
	Newport, Ky.	5.10 *A1*	6.275 *A1*										
	Gary, Ind. Harbor, Indiana	5.10 *U1, I3,Y1*	6.275 *U1, I3,Y1*	6.875 *U1, I3*	6.775 *U1, I3,Y1*	7.225 *U1*	7.525 *U1, Y1,I3*	9.275 *U1, Y1*		6.40 *Y1*	$10.40 *U1, Y1*	$9.10 *I3, U1,Y1*	7.85 *U1, Y1*
	Granite City, Ill.	5.20 *G2*	6.375 *G2*	6.975 *G2*	6.875 *G2*							$9.20 *G2*	7.95 *G2*
	Kokomo, Ind.			6.975 *C9*						6.50 *C9*			
	Mansfield, Ohio	5.10 *E2*	6.275 *E2*			7.225 *E2*							
	Middletown, Ohio		6.275 *A7*	6.875 *A7*	6.775 *A7*	7.225 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	5.10 *R3, S1*	6.275 *R3*	6.875 *R3* 7.65 *R3**	6.775 *S1*	7.225 *S1**, *R3*	7.525 *R3, S1*	9.275 *R3,*				$9.10 *R3*	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 *U1, J3,P6*	6.275 *U1, J3,P6*	6.875 *U1, J3* 7.50 *E3**	6.775 *U1*		7.525 *U1, J3*	9.275 *U1, J3*	10.025 *U1, J3*	6.40 *A5, J3,P6*	$10.40 *W5, J3*	$9.10 *U1, J3*	7.85 *U1, J3*
	Portsmouth, Ohio	5.10 *P7*	6.275 *P7*							6.40 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	5.10 *W3, W5*	6.275 *W3, F3,W5*	6.875 *W3, W5* 7.50 *W3**		7.225 *W3, W5*	7.525 *W3*	9.275 *W3*			$10.40 *W5, W3*	$9.10 *W5, W3*	7.85 *W5*
	Youngstown, Ohio	5.10 *U1, Y1*	6.275 *Y1*	7.50 *J3**	6.775 *Y1*		7.525 *Y1*	9.275 *Y1*		6.40 *Y1*			
WEST	Fontana, Cal.	5.825 *K1*	7.40 *K1*				8.25 *K1*	10.40 *K1*			$11.05 *K1*	$9.75 *K1*	
	Geneva, Utah	5.20 *C7*											
	Kansas City, Mo.									6.65 *S2*			
	Los Angeles, Torrance, Cal.									7.20 *B2*			
	Minnequa, Colo.									6.65 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	5.20 *C7*	7.225 *C7*	7.625 *C7*						7.20 *C7*	$11.05 *C7*	$9.75 *C7*	
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	5.10 *T2, R3*	6.275 *T2, R3*	6.875 *T2, R3*	6.775 *T2*					6.40 *T2,R3*	$10.50 *T2*	$9.20 *T2*	
	Houston, Texas									6.65 *S2*			

* Electrogalvanized sheets.

(Effective Feb. 16, 1959)

*7.425 at Sharon-Niles is 7.225

IRON AGE

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 *B3*	9.025 *B3*	8.30 *B3*					
	Buffalo, N. Y.	5.675 *R3,B3*	5.675 *R3,B3*	7.70 *B5*	6.725 *B3,R3*	9.025 *B3,B5*	8.30 *B3*	5.30 *B3*				8.00 *W6*
	Claymont, Del.							5.30 *C4*		7.50 *C4*	7.95 *C4*	
	Coatesville, Pa.							5.30 *L4*		7.50 *L4*	7.95 *L4*	
	Conshohocken, Pa.							5.30 *A2*	6.375 *A2*	7.50 *A2*	7.95 *A2*	
	Harrisburg, Pa.							5.30 *P2*	6.475 *P2*			
	Milton, Pa.	5.825 *M7*	5.825 *M7*									
	Hartford, Conn.			8.15 *R3*		9.325 *R3*						
	Johnstown, Pa.	5.675 *B3*	5.675 *B3*		6.725 *B3*		8.30 *B3*	5.30 *B3*		7.50 *B3*	7.95 *B3*	8.00 *B3*
	Fairless, Pa.	5.825 *U1*	5.825 *U1*		6.875 *U1*							
	Newark, Camden, N. J.			8.10 *W10, P10*		9.20 *W10, P10*						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 *W10* 8.15 *J3*	6.80 *N8*	9.175 *N8*						
	Sparrows Pt., Md.		5.675 *B3*					5.30 *B3*		7.50 *B3*	7.95 *B3*	8.10 *B3*
	Palmer, Worcester, Readville, Mansfield, Mass.			8.20 *B5, C14*		9.325 *A5,B5*						8.30 *A5, W6*
	Spring City, Pa.			8.10 *K4*		9.20 *K4*						
MIDDLE WEST	Alton, Ill.	5.875 *L1*										8.20 *L1*
	Ashland, Newport, Ky.							5.30 *A7,A9*		7.50 *A9*	7.95 *A7*	
	Canton, Massillon, Mansfield, Ohio	6.15* *R3*		7.65 *R3,R2*	6.725 *R3* 6.475 *T5*	9.025 *R3,R2* 8.775 *T5*		5.30 *E2*				
	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.675 *U1,R3, W8,N4,P13*	5.675 *U1,R3, N4,P13,W8* 5.875 *L1*	7.65 *A5, W10,W8, B5,L2,N9*	6.725 *U1,R3, W8*	9.025 *A5, W10,W8, L2,N8,B5*	8.30 *U1,W8, R3*	5.30 *U1,A1, W8,13*	6.375 *U1*	7.50 *U1, W8*	7.95 *U1, W8*	8.00 *A5,R3, W8,N4, K2,W7*
	Cleveland, Ohio Elyria, Ohio	5.675 *R3*	5.675 *R3*	7.65 *A5,C13, C18*		9.025 *A5, C13,C18*	8.30 *R3*	5.30 *R3,J3*	6.375 *J3*		7.95 *R3,J3*	8.00 *A5, C13,C18*
	Detroit, Mich.	5.675 *G3*	5.675 *G3*	7.90 *P3* 7.85 *P8,B5* 7.65 *R5*	6.725 *R5,G3*	9.025 *R5* 9.225 *B5,P3, P8*	8.30 *G3*	5.30 *G3*		7.50 *G3*	7.95 *G3*	
	Duluth, Minn.											8.00 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 *U1,I3, Y1*	5.675 *U1,I3, Y1*	7.65 *R3,J3*	6.725 *U1,I3, Y1*	9.025 *R3,M4*	8.30 *U1,Y1*	5.30 *U1,I3, Y1*	6.375 *J3, I1*	7.50 *U1, Y1*	7.95 *U1, Y1,I3*	8.10 *M4*
	Granite City, Ill.							5.40 *G2*				
	Kokomo, Ind.		5.775 C9									8.10 *C9*
	Sterling, Ill.	5.775 *N4*	5.775 *N4*					5.30 *N4*				8.10 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.65 *C10*	6.725 *C10,*	9.025 *C10*		5.30 *R3,S1*		7.50 *S1*	7.95 *R3, S1*	
	Owensboro, Ky.	5.675 *G5*			6.725 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 *U1,J3*	5.675 *U1,J3*	7.65 *A5,B4, R3,J3,C11, W10,S9,C8, M9*	6.725 *U1,J3, C11,B7*	9.025 *A5, W10,R3,S9, C11,C8,M9*	8.30 *U1,J3*	5.30 *U1,J3*	6.375 *U1,J3*	7.50 *U1, J3,B7*	7.95 *U1, J3,B7*	8.00 *A5, J3,P6*
	Portsmouth, Ohio											8.00 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.30 *W5*				
	Youngstown, Ohio	5.675 *U1,R3, Y1*	5.675 *U1,R3, Y1*	7.65 *A1,Y1, F2*	6.725 *U1,Y1*	9.025 *Y1,F2*	8.30 *U1,Y1*	5.30 *U1, R3,Y1*		7.50 *Y1*	7.95 *U1,Y1*	8.00 *Y1*
WEST	Emeryville, Cal. Fontana, Cal.	6.425 *J5* 6.375 *K1*	6.425 *J5* 6.375 *K1*		7.775 *K1*		9.00 *K1*	6.10 *K1*		8.30 *K1*	8.75 *K1*	
	Geneva, Utah							5.30 *C7*			7.95 *C7*	
	Kansas City, Mo.	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*					8.25 *S2*
	Los Angeles, Torrance, Cal.	6.375 *C7,B2*	6.375 *C7,B2*	9.10 *R3,P14, S12*	7.775 *B2*	11.00 *P14, S12*	8.625 *B2*					8.95 *B2*
	Minnequa, Colo.	6.125 *C6*	6.125 *C6*					6.15 *C6*				8.25 *C6*
	Portland, Ore.	6.425 *O2*	6.425 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.375 *C7* 6.425 *B2*	6.375 *C7* 6.425 *B2*				8.675 *B2*					8.95 *C7,C6*
	Seattle, Wash.	6.425 *B2,N6*	6.425 *B2*				8.675 *B2*	6.20 *B2*		8.40 *B2*	8.85 *B2*	
SOUTH	Atlanta, Ga.	5.875 *A8*	5.675 *A8*									8.00 *A8*
	Fairfield City, Ala. Birmingham, Ala.	5.675 *T2,R3, C16*	5.675 *T2,R3, C16*	8.25 *C16*			8.30 *T2*	5.30 *T2,R3*			7.95 *T2*	8.00 *T2,R3*
	Houston, Ft. Worth, Lone Star, Texas	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*	5.40 *S2*		7.60 *S2*	8.05 *S2*	8.25 *S2*

† Merchant Quality—Special Quality 35¢ higher. (Effective Feb. 16, 1959) * Special Quality.

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C4 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Driver Co., Newark, N. J.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeves Steel Corp., Mansfield, O.
E3 Enamel Products & Plating Co., McKeesport, Pa.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owenboro, Ky.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Steel Corp., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham
S12 Sierra Drawn Steel Corp., Los Angeles, Calif.

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago.
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING — **Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.**

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½ In.		3 In.		3½-4 In.	
STANDARD T. & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50								
Youngstown *R3*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Fontana *K1*	+10.75	+26.00	+7.75	+22.00	+4.25	+17.50	+1.75	+16.75	+1.25	+15.75	+0.75	+15.25	0.75	+15.50								
Pittsburgh *J3*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
Alton, Ill. *L1*	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50								
Sharon *M3*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Fairless *N2*	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50								
Pittsburgh *N1*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
Wheeling *W5*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Wheatland *W4*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Youngstown *Y1*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
Indiana Harbor *Y1*	1.25	+14.0	4.25	+10.0	7.75	+5.50	10.25	+4.75	10.75	+3.75	11.25	+3.25	12.75	+3.50								
Lorain *N2*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	4.75	+9.0	8.75	+5.0	11.75	+0.50	12.25	+1.75	12.75	+0.75	13.25	+0.25	13.75	+1.50								
Youngstown *R3*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Fairless *N2*	4.75	+9.0	8.75	+5.0	11.75	+0.50	12.25	+1.75	12.75	+0.75	13.25	+0.25	13.75	+1.50								
Fontana *K1*	+6.25		+2.25		0.75		1.25		1.75		2.25		2.75									
Pittsburgh *J3*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50
Alton, Ill. *L1*	4.75	+9.0	8.75	+5.0	11.75	+0.50	12.25	+1.75	12.75	+0.75	13.25	+0.25	13.75	+1.50								
Sharon *M3*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Pittsburgh *N1*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50
Wheeling *W5*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Wheatland *W4*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Youngstown *Y1*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50
Indiana Harbor *Y1*	5.75	+8.0	9.75	+4.0	12.75	0.50	13.25	+0.75	13.75	0.25	14.25	0.75	14.75	+0.50								
Lorain *N2*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50

Threads only, buttweld and seamless, 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.50¢ per lb.

(Effective Feb. 16, 1959)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.84	T-1
18	4	1	—	5	2.545	T-4
18	4	2	—	—	2.005	T-2
1.5	4	1.5	8	—	1.20	M-1
6	4	3	6	—	1.59	M-3
6	4	2	5	—	1.345	M-2

High-carbon chromium.. .955 D-3, D-5
Oil hardened manganese .505 O-2
Special carbon ..... .38 W-1
Extra carbon ..... .38 W-1
Regular carbon ..... .325 W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*L4, C4, A3, J2*) 10 pct	15 pct	20 pct	Sheet (*I2*) 20 pct
Stainless Type	302				37.50
	304	28.80	31.55	34.30	40.00
	316	42.20	46.25	50.25	58.75
	321	34.50	37.75	41.05	47.25
	347	40.80	44.65	48.55	57.00
	405	24.60	26.90	29.25	.....
	410	22.70	24.85	27.00	.....
	430	23.45	25.65	27.90	.....

CR Strip (S9) Copper, 10 pct, 2 sides, 42.05; 1 side, 35.55.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.75	6.725	7.25	.....	.....	15.35
Cleveland *R3*	.....	.....	.....	10.10	.....	.....
So. Chicago *R3*	.....	.....	.....	.....	.....	.....
Ensley *T2*	5.75	6.725	.....	10.10	6.875	.....
Fairfield *T2*	.....	6.725	.....	.....	6.875	.....
Gary *U1*	5.75	.....	.....	10.10	.....	.....
Ind. Harbor *I3*	.....	.....	.....	.....	.....	.....
Johnstown *B3*	.....	6.725	.....	10.10	.....	.....
Joliet *U1*	.....	.....	7.25	.....	.....	15.35
Kansas City *S2*	.....	.....	.....	10.10	.....	.....
Lackawanna *B3*	5.75	6.725	7.25	.....	6.875	.....
Lebanon *B3*	.....	.....	7.25	.....	.....	15.35
Minnequa *C6*	5.75	7.225	7.25	10.10	6.875	15.35
Pittsburgh *P5*	.....	.....	.....	.....	.....	14.75
Pittsburgh *J3*	.....	.....	.....	10.10	.....	.....
Seattle *B2*	.....	.....	.....	.....	6.75	15.85
Steelton *B3*	5.75	.....	7.25	.....	6.875	.....
Struthers *Y1*	.....	.....	.....	10.10	.....	.....
Torrance *C7*	.....	.....	.....	.....	6.75	.....
Williamsport *S5*	.....	6.725	.....	.....	.....	.....
Youngstown *R3*	.....	.....	.....	10.10	.....	.....

COKE

	Net-Ton
Furnace, beehive (f.o.b.) Connellsville, Pa.	$14.50 to $15.50
Foundry, beehive (f.o.b.)	$18.50
Foundry oven coke	
Buffalo, del'd	$33.25
Detroit f.o.b.	32.00
New England, del'd	33.55
Kearney, N. J., f.o.b.	31.25
Philadelphia, f.o.b.	31.00
Swedeland, Pa., f.o.b.	31.00
Painesville, Ohio, f.o.b.	34.35
Erie, Pa., f.o.b.	32.00
Cleveland, del'd	34.19
Cincinnati, del'd	32.84
St. Paul, f.o.b.	31.25
St. Louis, f.o.b.	33.00
Birmingham, f.o.b.	30.35
Milwaukee, f.o.b.	32.00
Neville Is., Pa.	30.75

LAKE SUPERIOR ORES

51.50% Fe natural content, delivered lower Lake ports. Prices for 1958 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Fully Processed
Field	.....	9.875	.....
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor	.....	12.475	.....
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30	Grain Oriented	
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: Beech Bottom (*W5*); Brackenridge (*A3*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*S1*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	27.25	40	100,110	12.50
20	72	26.50	35	110	11.20
18	72	27.50	30	110	11.70
14	72	27.25	24	72	11.95
12	72	28.25	20	90	11.55
10	60	29.50	17	72	12.10
10	48	30.00	14	72	12.55
7	60	29.75	10	60	13.80
6	60	33.25	8	60	14.25
4	40	37.00			
3	40	39.25			
2½	30	41.50			
2	24	64.00			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

Super duty, Mo., Pa., Md., Ky....	$185.00
High duty (except Salina, Pa., add $5.00)	140.00
Medium duty	125.00
Low duty (except Salina, Pa., add $2.00)	103.00
Ground fire clay, net ton, bulk...	22.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$158.00
Childs, Hays, Latrobe, Pa.	163.00
Chicago District	168.00
Western Utah	183.00
California	165.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	163.00-168.00
Silica cement, net ton, bulk, Latrobe	29.75
Silica cement, net ton, bulk, Chicago	26.75
Silica cement, net ton, bulk, Ensley, Ala.	27.75
Silica cement, net ton, bulk, Mt. Union	25.75
Silica cement, net ton, bulk, Utah and Calif.	39.00

Chrome Brick

Per net ton

Standard chemically bonded, Balt.	$109.00
Standard chemically bonded, Curtiner, Calif.	119.00
Burned, Balt.	103.00

Magnesite Brick

Standard, Baltimore	$140.00
Chemically bonded, Baltimore	119.00

Grain Magnesite

St. ⅜ to ½-in. grains

Domestic, f.o.b. Baltimore in bulk.	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in:	
Pa., W. Va., Ohio	$16.75
Missouri Valley	15.00
Midwest	17.00

(Effective Feb. 16, 1959)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	"T" Fence Posts Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
Alabama City *R3*	173	187	...	212	193	9.00	9.55
Aliquippa *J3****	173	190	.....	.....	190	9.00	9.675
Atlanta *A8***	175	192	...	214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	9.10	9.775
Buffalo *W6*	.....	.....	.....	.....	.....	9.00	9.55*
Chicago *N4***	177	190	172	212	196	9.00	9.70
Chicago *R3*	.....	.....	.....	.....	.....	9.00	9.55
Cleveland *A6*	.....	.....	.....	.....	.....	.....	.....
Cleveland *A5*	.....	.....	.....	.....	.....	9.00	.....
Crawf'dav. *M4***	175	192	...	214	198	9.10	9.775
Donora, Pa. *A5*	173	187	...	212	193	9.00	9.55
Duluth *A5*	173	187	...	212	193	9.00	9.55
Fairfield, Ala. *T2*	173	187	...	212	193	9.00	9.55
Galveston *D4*	9.10‡	.....	.....	.....	.....	.....	.....
Houston *S2*	178	192	...	217	198	9.25	9.80†
Jacksonville *M4*	184-1	197	...	219	203	9.10	9.775
Johnstown *B3***	173	190	177	...	196	9.00	9.675
Joliet, Ill. *A5*	173	187	...	212	193	9.00	9.55
Kokomo *C9*	175	189	...	214	195*	9.10	9.65*
L. Angeles *B2****	.....	.....	.....	.....	.....	9.95	10.625
Kansas City *S2**	178	192	...	217	198*	9.25	9.80†
Minnequa *C6*	178	192	182	217	198†	9.25	9.80†
Monessen *P6*	.....	.....	.....	.....	193	8.65	9.325
Palmer, Mass. *W6*	.....	.....	.....	.....	.....	9.30	9.85*
Pittsburg, Cal. *C7*	192	210	.....	.....	213	9.60	10.15
Rankin, Pa. *A5*	173	187	.....	.....	193	9.00	9.55
So. Chicago *R3*	173	187	.....	.....	193	8.65	9.20
S. San Fran. *C6*	.....	.....	.....	236	.....	9.95	10.50†
SparrowsPt. *B3***	175	.....	.....	214	198	9.10	9.775
Struthers, O. *Y1**	.....	.....	.....	.....	.....	8.65	9.20
Worcester *A5*	179	.....	.....	.....	.....	9.30	9.85
Williamsport *S5*	.....	.....	.....	.....	.....	.....	.....

* Zinc less than .10¢. *** .10¢ zinc.
** 11-12¢ zinc. † Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Anderson, Ind. *G4*	8.95	10.40	12.60	15.60	18.55
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	.....	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	.....	.....
Detroit *D1*	9.05	10.50	12.70	15.70	.....
Detroit *D2*	9.05	10.50	12.70	.....	.....
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60	.....	.....
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	.....	.....	12.90	16.10	19.30
Indianapolis *R5*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C1*	11.15	12.60	14.80	17.80	.....
New Britain, Conn. *S7*	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	.....
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	.....
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*	.....	10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *R5*	9.10	10.55	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
Babcock & Wilcox	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
National Tube	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
Pittsburgh Steel	2	13	40.28	47.21	.....
	2½	12	54.23	63.57	.....
	3	12	62.62	73.40	.....
	3½	11	73.11	85.70	.....
	4	10	97.08	113.80	.....

METAL POWDERS

Cents per lb, minimum truckload, delivered E. of Miss. River, unless otherwise noted.

Iron Powders

Compacting Powders

Electrolytic, imported, f.o.b.	29.50 to 33.00
Electrolytic, domestic	34.50
Sponge	11.25
Atomized	11.25
Hydrogen Reduced	11.25 to 12.00
Carbonyl	88.00
Welding Powders*	8.10
Cutting and Scarfing Powders*	9.10

Copper Powders

Electrolytic, domestic	41.00
Precipitated	40.50 to 45.00
Atomized	39.80 to 48.30
Hydrogen reduced, f.o.b.	43.25
Bronze	47.20 to 51.50
Chromium, electrolytic	$5.00
Lead	19.00
Manganese, f.o.b.	42.00
Molybdenum	$3.60 to $3.95
Nickel	$1.05 to $1.03
Nickel Silver	53.50
Nickel Steel	13.00
Solder	13¢ plus metal value
Stainless Steel, 302	$1.07
Stainless Steel, 316	$1.26
Steel, atomized, prealloyed, 4600 series	14.00 plus metal value
Tin	14¢ plus metal value
Titanium, 99.25+%, per lb., f.o.b.	$11.25
Tungsten	$3.15 (nominal)

* F.O.B., shipping point.

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Pct. Discounts

Bolts	1–4 Containers	5 Containers	20,000 Lb.	40,000 Lb.
Machine ½" and smaller x 3" and shorter	55	57	61	62
⅝" diam. x 3" and shorter	47	49½	54	55
¾" thru 1" diam x 6" and shorter	37	39½	45	46
¾" thru 1" diam. longer than 6" and 1¼" and larger x all lengths	31	34	40	41
Rolled thread, ½" and smaller x 3" and shorter	55	57	61	62
Carriage, lag, plow, tap, blank, step, elevator and fitting up bolts ½" and smaller x 6" and shorter	48	50½	55	56

Note: Add 25 pct for less than container quantity. Distributor prices are 5 pct less on bolts and square nuts.

Nuts, Hex, HP reg. & hvy.	Full case or Keg price
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

C. P. Hex, reg. & hvy.

¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

Hot Galv. Hex Nuts (All Types)

¾ in. and smaller	41

Semi-finished Hex Nuts

¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

(Add 25 pct for broken case or keg quantities)

Finished

⅞ in. and smaller	65

Rivets	*Base per 100 lb*
½ in. and larger	$12.85
	Pct. Off List
7/16 in. and smaller	15

Cap Screws	*Discount (Packages)*
	Full Finished H. C. Heat Treat
New std. hex head, packaged	Full Case

		C-1018 Steel Full-Finished Cartons	Bulk
⅝" diam. and smaller x 6" and shorter		54	42
¾", ⅞", and 1" diam. x 6" and shorter		38	23
⅝" diam. and smaller x longer than 6"		..	..
¾", ⅞", and 1" diam. x longer than 6"		..	..
¼" through ⅝" dia. x 6" and shorter		59	48
⅝" through 1" dia. x 6" and shorter		45	32

Minimum quantity—¼" through ⅝" diam., 15,000 pieces; 7/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

	Quantity	Discount Mach. Screws	Discount Stove Bolts
Plain Finish Cartons		60	60
Bulk			
To ¼" diam. incl.	25,000-and over	60	..
5/16 to ½" diam. incl.	15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

	Quantity	Discount Hex	Discount Square
In Cartons		16	19
In Bulk			
⅜" diam. & smaller	25,000-and over	15	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Rolled elliptical, 18 in. or longer, 5000 lb lots	45.00
Electrodeposited	36.00
Brass, 80-20, ball anodes, 2000 lb or more	47.50
Zinc, ball anodes, 2000 lb lots	18.00
(for elliptical add 1¢ per lb)	
Nickel, 99 pct plus, rolled carton, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium	1.45
Tin, ball anodes $1.05 per lb (approx.).	

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	65.90
Copper sulphate, 100 lb bags, per cwt.	22.75
Nickel salts, single, 100 lb bags	36.00
Nickel chloride, freight allowed, 100 lb	45.00
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	23.70
(Philadelphia price 24.00)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum N. Y.	45.50
Chromic acid, flake type, 10,000 lb or more	30.44

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.5
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

STEEL SERVICE CENTERS

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (18 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (18 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.91	9.29	9.40	9.39	13.24*				
Baltimore	$.10	8.65	9.35	9.09	9.15	9.10	9.65	9.55	11.80*	16.28	15.28	19.82	19.08
Birmingham		8.18	9.45	10.46	8.51	8.89	9.00	8.99					
Boston	.10	9.41	10.50	12.07	9.84	10.12	10.11	10.21	13.45*	16.79	15.79	20.29	19.56
Buffalo	.15	8.40	9.75	11.00	8.90	9.35	9.40	9.30	11.60*	16.34	15.55	19.01	19.30
Chicago	.15	8.40	9.60	11.05	8.66	9.04	9.15	9.14	9.30	16.20	15.20	19.70	18.95
Cincinnati	.15	8.58	9.65	10.70	8.98	9.42	9.71	9.46	11.68*	16.52	15.52	20.02	19.27
Cleveland	.15	8.51	9.69	11.51	8.78	9.28	9.54	9.25	11.40*	16.31	15.31	19.81	19.06
Denver	.20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19				20.84
Detroit	.15	8.66	9.85	11.40	9.03	9.41	9.71	9.45	9.66	15.46	15.48	18.81	19.23
Houston		8.10	8.60		8.15	8.45	8.05	8.10	11.60	16.20	15.25	19.65	18.95
Kansas City	.15	9.02	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62
Los Angeles		8.70[5]	11.20–11.80	12.20	9.15	9.10	9.00	9.10	12.95	17.30	16.35	21.30	20.60
Memphis	.15	8.55	9.80		8.60	8.93	9.01	8.97	12.11*				
Milwaukee	.15	8.54	9.73	11.19	8.88	9.18	9.37	9.28	9.54	16.34	15.34	19.84	19.09
New York	.10	9.27	10.59	11.20	9.74	9.87	9.84	10.09	13.35*	16.16	15.60	20.10	19.35
Norfolk	.20	8.20			8.90	8.65	9.20	8.90	10.70				
Philadelphia	.10	8.30	9.35	10.44	9.35	9.25	9.20	9.50	12.05*	16.58	15.58	20.08	19.33
Pittsburgh	.15	8.50–8.60	9.70–9.95	11.05	8.76	9.05	9.15	9.14	11.40*	16.20	15.20	19.70	18.95
Portland		10.00[1]	11.75[2]	13.30[3]	11.95[4]	11.50[5]	11.10[6]	9.85[7]	15.30*	18.50	17.45	20.75	20.25
San Francisco	.10	9.75	11.20	11.50	9.85	10.10	9.95	10.25	13.70	17.05	16.35	21.05	20.60
Seattle		9.95	11.55	12.45	10.00	9.70	9.80	10.10	14.70	17.15	16.80	20.65	20.60
Spokane	.15	10.10	11.70	12.60	10.65	9.85	9.95	10.75	14.85	17.75	16.95	21.55	20.75
St. Louis	.15	8.78	9.98	11.43	9.04	9.42	9.63	9.52	9.93	16.58	15.58	20.08	19.33
St. Paul	.15	8.94	10.19	11.64	8.99	9.45	9.53	9.70[7]	10.16		15.41		19.21

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. **All sizes except 18 and 16 gage.

†† 10¢ zinc. ‡ Deduct for country delivery. * C1018—1 in. rounds. [1] 10 ga. x 36" x 120"; [2] 20 ga. x 36" x 120"; [3] 26 ga. x 30" x 96"; [4] 4½" x 1" in lots of 1000 to 9999; [5] sheared plate ¼" x 84" in lots of 1000 to 9999; [6] 3" x 5.70" in lots of 1000 to 9999; [7] M-1020—1-in. rounds in lots of 1000 to 9999; [8] 15 ga. & heavier.

(Effective Feb. 16, 1959)

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*	.....	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	66.50	67.00	67.50	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50	.....	.....
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66.50	67.00	67.50	.....
Sharpsville *S3*	66.00	.....	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	73.00
Youngstown *Y1*	.....	.....	66.50	.....	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31-0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1, I4* (Globe Div.), $78.00; Niagara Falls (15.01-15.50), $101.00; Keokuk (14.01-14.50), $103.50; (15.51-16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.): $64.00. Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.75	24.75	24.00	26.25	—	28.00	41.25	33.50	38.50	—	17.50	—	17.75
Slabs, billets	28.00	31.50	29.00	32.75	33.25	34.50	51.25	41.50	48.25	—	22.25	—	22.50
Billets, forging	—	37.75	38.75	39.50	42.50	42.00	64.50	48.75	57.75	29.25	29.25	29.75	29.75
Bars, struct.	43.50	44.50	46.00	46.75	49.75	49.50	75.75	57.50	67.25	35.00	35.00	35.50	35.50
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25-31.75	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	—	42.25	43.50	44.25	47.25	47.00	71.75	54.50	63.75	33.25	33.25	33.75	33.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Vandergrift, Pa., *U1;* Washington, Pa., *W2, J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Detroit, *M2;* Louisville, O., *R5.*

Strip: Midland, Pa., *C11;* Waukegan, Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* W. Leechburg, Pa., *A3;* Bridgeville, Pa., *U2;* Detroit, *M2;* Detroit, *S1;* Canton, Massillon, O., *R3;* Harrison, N. J., *D3;* Youngstown, *R5;* Sharon, Pa., *S1;* Butler, Pa., *A7;* Wallingford, Conn., *U3* (plus further conversion extras); *W1* (25¢ per lb. higher); New Bedford, Mass., *R6;* Gary, *U1* (25¢ per lb. higher).

Bar: Baltimore, *A7;* S. Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R5;* S. Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Canton, O., *T5, R3;* Ft. Wayne, *I4;* Detroit, *R5;* Gary, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8.*

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Newark, N. J. *D2;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2;* Detroit, *R5.*

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11;* S. Chicago, *U1.*

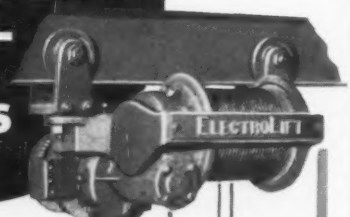
Plates: Baltimore, *E1;* Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3;* Coatesville, Pa., *C15;* Vandergrift, Pa., *U1;* Gary, *U1.*

Forging billets: Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R3;* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracuse, *C11;* Detroit, *R5;* Munhall, Pa., S. Chicago, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8.*

(Effective Feb. 16, 1959)

For years of steady service—

ELECTROLIFT WORM-DRIVE HOISTS



- **Simple to operate**—one man control, push-button or rope
- **Built to last**—with quality parts and automatic lubrication
- **Safe**—alloy steel worm-drive brake holds loads securely
- **Compact**—no overhung gears . . . allow close headroom
- **Clean and quiet**—working parts are fully enclosed

ElectroLift worm-drive hoists give you smooth, fast control over loads of from ¼ to 10 tons. For details on speeds and models, consult your ElectroLift representative, listed in the classified directory.

WORM DRIVE ELECTROLIFT HOISTS

6456

204 Sargeant Avenue Clifton, N. J.

STRAIGHTEN, SIZE, COIN

WARPED MALLEABLE IRON CASTINGS in one operation on the CECOSTAMP

- **Save in manufacturing costs**
- **Restrike to close tolerances**
- **Reduce number of rejects**
- **Improve inspection methods**

The Cecostamp's impact blow not only straightens, but can also coin to close tolerances • 100% restrike in the Cecostamp makes it unnecessary to inspect and size castings manually, piece by piece • No longer is it necessary to laboriously stack castings in annealing baskets to minimize distortion • In many cases, close tolerance restrike reduces casting weight and minimizes machining operations • The Cecostamp is an air-powered Drop Stamp; rapid, safe, easily operated • Dies are simple, inexpensive • Applications often displace larger, more expensive presses • Write for complete details.

CHAMBERSBURG ENGINEERING CO.
CHAMBERSBURG, PA.

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, .30-1.00% max. Si.

0.02% C....	41.00	0.50% C....	38.00
0.05% C....	39.00	1.00% C....	37.75
0.10% C....	38.50	1.50% C....	37.50
0.20% C....	38.25	2.00% C....	37.25

4.00-4.50% C, 60-70% Cr, 1-2% Si.. 28.75
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si 28.25
0.025% C (Simplex) 36.75
8% max C, 50-55% Cr, 6% max Si. 25.75
4½% max C, 50-55% Cr, 2% max Si 26.50

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97.25% min. Cr, 1% max. Fe.
0.10% max. C $1.29
9 to 11% C, 88-91% Cr, 0.75% Fe... 1.38

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.
Carloads $1.15
Ton lots 1.17
Less ton lots 1.19

Low Carbon Ferrochrome Silicon

(Cr 39-41%, Si 42-45%, C 0.05% max.)
Carloads, delivered, lump, 3-in. x down, packed.
Price is sum of contained Cr and contained Si.

	Cr	Si
Carloads, bulk	28.25	14.60
Ton lots	33.50	16.05
Less ton lots	35.10	17.70

Calcium-Silicon

Per lb of alloy, lump, delivered, packed.
30-33% Cr, 60-65% Si, 3.00 max. Fe.
Carloads, bulk 24.00
Ton lots 27.95
Less ton lots 29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.
16-20% Ca, 14-18% Mn, 53-59% Si.
Carloads, bulk 23.00
Ton lots 26.15
Less ton lots 27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.
Ton lots 21.15
Less ton lots 22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.
Carload lots 18.45
Ton lots 19.95
Less ton lots 21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.
Carload packed 19.20
Ton lots to carload packed 21.15
Less ton lots 22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25

Add or substract 0.1¢ for each 1 pct Mn above or below base content.
Briquets, delivered, 66 pct Mn:
Carloads, bulk 14.80
Ton lots packed in bags 17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.
Carload, packed 45.75
Ton lots 47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.
Carloads 34.00
Ton lots 36.00
250 to 1999 lb 38.00
Premium for Hydrogen - removed metal 0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn 25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, packed, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% (Bulk) P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si ...	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.
Carloads bulk 12.80
Ton lots, packed 14.45
Carloads, bulk, delivered, per lb of briquet 15.10
Briquets, packed pallets, 3000 lb up to carloads 16.30

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00.

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

	Ton lots,	Carloads,
98.25% Si, 0.50% Fe..	24.95	23.65
98% Si, 1.0% Fe	24.45	23.15

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.
Carloads, bulk 8.00
Ton lots, packed 10.80

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si....	14.60	75% Si....	16.90
65% Si....	15.75	85% Si....	18.60
	90% Si....	20.00	

Ferrovanadium

50-55% V delivered, per pound, contained V, in any quantity.
Openhearth 3.20
Crucible 3.30
High speed steel 3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
100 to 1999 lb..	2.40	3.30	4.55

(Effective Feb. 16, 1959)

Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.
Carloads, bulk ..... 9.85¢
Ton lots ..... 11.20¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.50

Ferrocolumbium, 50-60% lb, 2 in. x D, delivered per pound contained Cb.
Ton lots $3.90
Less ton lots 3.95

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Cb plus Ta $3.40

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.. $1.76

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $5.00 unitage, per gross ton $120.00
10 tons to less carload $131.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots $1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $240.00

Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered ..... $2.15 (nominal)

Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa. $1.49
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.38

Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.
Carload, bulk lump ..... 18.50¢
Ton lots, packed lump ..... 20.50¢
Less ton lots ..... 21.00¢

Vanadium oxide, 86-89% V_2O_5 per pound contained V_2O_5 .... $1.38

Zirconium silicon, per lb of alloy 35-40% del'd, carloads, bulk.. 26.25¢
12-15%, del'd lump, bulk-carloads ..... 9.25¢

Boron Agents

Borosil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B
2000 lb carload $5.50

Bortram, f.o.b. Niagara Falls.
Ton lots per pound ..... 45¢
Less ton lots, per pound ..... 50¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.
Ton lots per pound ..... 14.00¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots. F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up $1.20
10 to 14% B ..... .85
14 to 19% 1.20
19% min. B 1.50

Grainal, f.o.b. Cambridge, O., freight, allowed, 100 lb and over
No. 1 ..... $1.05
No. 79 ..... 50¢

Manganese-Boron, 75.00% Mn, 17.50% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.
Ton lots (packed) $1.46
Less ton lots (packed) 1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots 2.15

RAILWAY EQUIPMENT
FOR SALE
Used As-Is Reconditioned
RAILWAY CARS
All Types
SERVICE-TESTED
FREIGHT CAR REPAIR PARTS
For All Types of Cars
LOCOMOTIVES
Diesel, Steam, Gasoline
Diesel-Electric

SPECIAL
STANDARD GAUGE CARS
10 COVERED HOPPER CARS
70-Ton Capacity
ORE HOPPER CARS
660 Cubic Feet
40- and 50-Ton Capacity

RAILWAY TANK CARS and STORAGE TANKS
6,000- 8,000- and 10,000 Gallon
Cleaned and Tested
CRANES
Overhead and Locomotive

IRON & STEEL PRODUCTS, INC.
General Office
13496 S. Brainerd Ave.
Chicago 33, Illinois
Phone: Mitchell 6-1212
New York Office
Suite 1608-9, 51-B East 42nd St.
New York 17, N. Y.
Phone: YUkon 6-4766
"ANYTHING containing IRON or STEEL"

REBUILT — GUARANTEED ELECTRICAL EQUIPMENT
MOTOR GENERATOR SETS

Qu.	K.W.	Make	R.P.M.	Volts D.C.	Volts A.C.
3*	3500	Al.Ch.	514	350/700	13,800/6900 4160
1	2000	G.E.	450	132/265	4160/2400
2*	2000	Whse.	720	600	13,800/6900 4160
2	1250	Whse.	720	600	4160/2400
1	1250	G.E.	450	250	4160/2400
2	1000	Whse.	720	600	4160/2400
2	500	Whse.	1200	125/250	4000/2300
1	450	Whse.	900	280/300	2300
3	300	Whse.	1200	125/250	4000/2300
1*	300	Al.Ch.	1200	250/300	2300
3	200	Whse.	1200	125/250	2300
1	150	Whse.	1200	250	2300
1	150	G.E.	1200	250	4000/2300
2	150	Rel.	1200	125	2300

*—3 Unit Sets

SPECIAL, before removal (1) 1875-K.W. Whse., M.G. Set, Gen. 250-V.D.C., 514 R.P.M. with 2700-H.P. Syn. Motor, 13800/6900/4000-V., 3 ph., 60 cy. with Control.

DIRECT CURRENT MOTORS

Qu.	H.P.	Make	Type	Volts	R.P.M.
1**	3000	G.E.	M.P.C.	300/600	250/360
3***	3000	Whse.	Rev.	525/600	600
1**	2200	Whse.	Mill	600	92/132
8**	1500	Whse.	Rev.	525	600
1**	1250	Al.Ch.	Mill	600	300/600
2**	940	S.S.	Mill	600	800/1000
1**	700	Whse.	Mill	600	143
4**	700	Whse.	Rev.	250	300/700
2**	645	S.S.	Mill	300	1000
1	600	Whse.	Mill	250	110/220
2	600	Al.Ch.	Mill	600	300/600
1	400	G.E.	M.P.C.	270	450
1	300	Whse.	Mill	230	300
2	275	Whse.	Q.M.660.6	250	425/850
1	175	G.E.	C.D.175-A	245	800/1025
1	125	Whse.	SK-184	230	575/850
1	125	Whse.	SK-190	230	450/1000
1	100	Rel.	461-T	250	1150/1500
1	100	Whse.	SK-182	230	450/1000
1	100	G.E.	CD-175	230	400/1200
1	80	Rel.	651-T	230	575/1150
1	80	E.Dy.	25-S	230	525/1050
1	50/80	Whse.	SK-131	230	500/1500
1*	50	G.E.	CD-175	230	400/1200
2*	30/40	Whse.	SK-131	230	500/1500

*—T.E.F.C. **—Enclosed Forced Ventilated
***—Two Motors in Tandem.

T. B. MAC CABE COMPANY
4302 Clarissa St., Philadelphia 40, Penna.
Cable Address "Maccsteel" Philadelphia, Pa.
Phone Davenport 4-8300

THE CLEARING HOUSE

Crane Inquiries Up, Sales Still Slow

Many Cleveland area crane buyers made plans during the recession to replace old equipment.

But, while still interested, they haven't yet translated the plans into orders.

▪ A big potential market piled up in the used crane business during the recession but has materialized into few orders, according to a leading Cleveland supplier.

"We are answering inquiries at the rate of four or five a week for cranes but they haven't developed into many orders so far," says Virl Berry, Ohio Crane & Engineering Co. "A good many of our customers took time during the recession to lay out plans for overhauling their shops to get them in shape for the next boom. They have proved out the figures on what can be accomplished with better equipment."

Smaller Cranes Move—"But most are waiting for the money from upstairs. Meanwhile we and others in the business are concentrating on supplying smaller cranes in the 5 and 10 ton class for warehouses and similar use. The whole crane business has shifted to these smaller ac cranes in the last year."

Among the firms most actively buying the smaller units are steel warehouses, machine tool firms, and some press manufacturers. Most of these fall into the 5-10 ton capacity category with ac motors and controls.

Price Problems — One of the problems facing crane rebuilders is that the prices and fast deliveries recently quoted can not be met for long. And most firms put in a 30-day acceptance limit clause. Prices of component parts such as wire, contactors, motors, and similar electrical equipment have risen significantly so that the final price of a $30,000 to $40,000 ton crane can increase $3000 or more.

Another new trend in the business is a type of "reservation" where steel mills and other heavy industry firms are placing firm orders, with deposits, for delivery of cranes 2 and 3 years ahead.

Wide Selection—Because of the slowness of business on the heavy cranes, dealers have the best selection in years. One major concern at Cleveland, for example, has a 30 ton, 112 ft span crane completely rebuilt and selling at 50 pct of the cost of a new one. It carries a new crane guarantee

Sale Coming

A variety of toolroom, stamping, and jewelry making equipment will be offered during an auction sale on Feb. 25 at Beech & Kenilworth Sts., in South Norwood, Ohio.

Up for sale are 44 presses including 150-ton hydrodynamics, straight side, knuckle joint, open back inclinables, and high speed production units. Also offered are five rolling mills up to 10 in. standard, two 5 in. strip furnaces, and two gas generators.

CONSIDER GOOD USED EQUIPMENT FIRST

BENDING ROLLS
10' x 10 Ga. Bertsch No. 6 Initial Type
12' x ⅜" Hilles & Jones Pyramid Type
32' x ¾" BALDWIN PYRAMID TYPE—LATE
CRANES—OVERHEAD ELECTRIC TRAVELING

7½ ton P&H	60' Span 230 Volt D.C.
8 ton P&H	55' Span 220/3/60
10 ton P&H	50' Span 230 Volt D.C.
10 ton P&H	39' Span 230 Volt D.C.
10 ton Milwaukee	57' Span 230 Volt D.C.
10 ton Shaw	48' Span 230 Volt D.C.
10 ton Whiting	75' Span 220/3/60 A.C.
10 ton Shaw	120' Span 230 Volt D.C.
15 ton P&H	50' Span 230 Volt D.C.
15 ton N-B-P	100' Span 220/3/60 A.C.
120 ton Shepard Niles	77' Span 230/3/60

CUT-OFF
Modern Model 2E, Capacity ¼" to 2" dia.
DRAW BENCHES
7,000 lb. Draw Bench, 51 ft. Draw
10,000 lb. Draw Bench, 50 ft. Draw
35,000 lb. Draw Bench, 41 ft. Draw
50,000 lb. Draw Bench, 20 ft. Draw
FORGING MACHINES
1" to 5" Acme, Ajax, National
GEAR REDUCERS
3000 H. P. United (2), Ratio 16.2-1 & 11.6-1
HAMMERS—BOARD DROP—STEAM DROP—STEAM FORGING 800 lb. to 12,000 lb. incl.
HEADER
#44 Waterbury Farrel DSOD, Capacity ⅝" x 6"
LATHE
24" x 23' Monarch Engine Lathe
LEVELERS—ROLLER
12" Waterbury Farrel 9 Rolls 6" Dia.
24" McKay 17 Rolls 2⅜" Dia.
66" Guide 17 Rolls 4½" Dia.
84" Bliss 17 Rolls 5½" Dia.
MOTOR
800 H.P. Westinghouse 2200/3/60 505 RPM
PRESS—EMBOSSING & COINING
#664 Toledo 600 ton, 2" Stroke
PRESSES—HYDRAULIC
300 ton Southwark, Bed 28" x 28", Stroke 25"
500 ton Watson Stillman Piercing Press, 48" x 72"
500 ton HPM Fastraverse, Bed 36" x 36"
1000 ton HPM Fastraverse, Bed 48" x 72", 36" Stroke
4500 ton B-L-H Bed 68 x 68", Stroke 40"
PRESSES—Straight Side
190 ton Toledo #57½, Bed Area 29x29", Stroke 10"
215 ton Clearing, Bed Area 36x42", Stroke 24"
500 ton Hamilton #1810¾, Area 19x17½" Stroke 1½"
PRESS—TOGGLE DRAWING
Bliss-Toledo #168¾, Bed Area 48x51", Stroke of Blankholder 18", Stroke of Plunger 28"
PUMP
250 GPM Aldrich Vertical Triplex 4¾x9", 1500# Pressure, with 250 H.P. Motor 2300/3/60
PUNCH & SHEAR COMBINATIONS
#1½ Buffalo Universal Ironworker
EF Cleveland, 60" Throat
ROLLING MILLS
6" x 5" Torrington Flat Wire Mill Line
3¼" x 7" Six Roll Cluster Mill
10" x 14" Single Stand Two High
10" x 16" Single Stand Two High
12" x 12" Single Stand Two High
12" x 16" Single Stand Two High
16" x 24" Two Stand Two High
20" x 36" Single Stand Two High
28" x 60" Single Stand Two High
ROLLS—FORMING
6 Stand Dahlstrom #450-6 for stock to 4⅛" wide
18 Stand Custom Built, 2½ Shaft, will take 36" wide
SHEAR LINE
Cleveland Cut off Machine, Leveler, Coil Cradle Handles steel sheets 48" wide up to 1/16" thick
SHEAR—ROTARY
#40A Quickwork Whiting, ½" Capacity
SHEARS—SQUARING
6" x 14 Ga. Edwards, Motor Drive—LATE
10' x ⅜" Niagara
10' x ½" Bertsch
SLITTERS
36" Yoder, 4½" Dia. Arbor
30" Paxson Slitting Line, 6" Dia. Arbor
STRAIGHTENERS
Torrington #1734 12-Roll, Capy. 1¾", Rd. 1-9/16"
⅝" Shuster Straightener, 12 Ft. Cut-off
SWAGING MACHINES
#4 Torrington 2-Die, Capy. 2" Tube, ⅝" Solid
#6A Fenn, Capy. 3⅜" Tube, 1⅛" Solid, 10" Die Length, With Hydraulic Feed
TESTING MACHINES
20,000 lb. Baldwin Univ. Hydraulic
50,000 lb. Baldwin Southwark Compression
100,000 lb. Olsen Universal Hydraulic
100,000 lb. Olsen Universal Beam Type
500,000 lb. Olsen Super DeLuxe Compression
TUBE REDUCERS
1⅛" Tube Reducer for steel
2⅛" Tube Reducer for steel
WIRE DRAWING MACHINES
Type B Morgan 4-Block Capy. #5 Rod down
Scudder 3-Block 20" Dia.
Syncro BBS-11 Fine Wire Drawing Machine
Superior 7-Draft Cone Type, Capy. 14 Ga. down to .0364

• Manufacturing **A. T. HENRY & COMPANY, INC.** Equipment •
50 CHURCH ST., NEW YORK CITY 8
Telephone: COrtlandt 7-3437

Confidential Certified Appraisals
Liquidations — Bona Fide Auction Sales Arranged

Consulting Engineering Service
Surplus Mfg. Equipment Inventories Purchased

STRAIGHTENERS

SHEET
60" x ¼" Aetna, Gear box, 17 rolls
60" x ¼" Roll & Machine, 17 rolls
54" x ⅜" McKay, Gear box, 7 rolls
40" x 22 ga. United, Gear box, 15 rolls

BAR
Kane & Roach, cap. 3½" solids, 2 rolls
#0 Sutton, cap. 5/16" to 1", 5 rolls
#1 Special Sutton, ⅜" to 3⅜", 5 rolls

In Stock—Immediate Delivery

LANG MACHINERY COMPANY, INC.
28th St. & A.V.R.R. Pittsburgh 22, Pa.
GRant 1-3594

FOR SALE

1—8" Diameter x 10" face 2-Hi Cold Mill
1—No. 22 Canton Alligator Shear 3" Rd. Cap.
1—3" Rd. Cap. Open End Vertical Bar Shear
1—2¾" Cap. Buffalo Billet Shear
1—12" Dia. x 16" face 2-Hi Skin Pass Mill

ALBERT CURRY & COMPANY, INC.
3519-21 BEGELOW BOULEVARD, PITTSBURGH 13, PA.

FOR SALE By STRUTHERS WELLS CORP.

MACHINE TOOLS

1—24" x 23 Ft. C.C. MONARCH ENGINE LATHE, Serial 10474, 27½" swing, 4-jaw chuck, two carriages, taper attachments, steadyrests, 30 HP., AC

3—NILES TIMESAVER BORING LATHES, Serial 22299, 22300, 22301. 33" x 12" diameter maximum depth bore, 20¼" maximum work diameter, 6" maximum bar diameter, spotting carriage, bar supports and tailstock. 25 HP., AC

1—STRUTHERS WELLS 100 PB-12 PRESS BRAKE, Serial 27-173, 12' x 5/32" Forming Capacity, 12'-6" between housings, 8" throat, 3" stroke. 10 HP., AC

1—3 H-12 LIBBY TURRET LATHE, 12½" hole, 28"—4 jaw chuck, extra long bed for 13' between chuck and turret, crossliding turret and taper attachment, 30 HP, DC

CRANES

1—10 Ton P&H O.E.T. CRANE, cab operated, Serial 10422, lift 14'-11", span 39'-0½", 3 motors, 230 volt DC

1—7½ Ton SHAW O.E.T. CRANE, cab operated, Serial 2416, 3½ ton auxiliary hoist, lift 34'-1" span 40'-0¾", 4 motors, 230 volt DC

1—5 ton SHAW O.E.T. CRANE, cab operated, Serial 1436, Lift 11'-2", span 31'-0½", 3 motors, 230 volt DC

ALL THE ABOVE IN GOOD TO EXCELLENT CONDITION MAY BE INSPECTED UNDER POWER

Write—Wire—Phone

STRUTHERS WELLS CORP.
TITUSVILLE, PENNSYLVANIA

eastern Rebuilt Machine Tools

THE SIGN OF QUALITY—THE MARK OF DEPENDABILITY

MANUFACTURING TYPE MILLING MACHINES
No. 00 Sundstrand Rigidmill, m.d.
No. 000 Brown & Sharpe Plain Production, m.d.
No. 08 Cincinnati, rise and fall, 1944
M80 Taylor & Fenn Duplex, spline, m.d.
No. MM-1-6 U.S. Multi-Miller, m.d.
No. 33H Sundstrand Trimplex Rigidmill, m.d.
No. 3A Sundstrand Plain Automatic Rigidmill, m.d.
24" Cincinnati Duplex Automatic, m.d.
54"x30"x16' Ingersoll Slab Miller, m.d.
Model 1402 Kearney & Trecker Simplex, m.d., production
Model 1404 Kearney & Trecker Simplex, m.d., production
No. 12 Brown & Sharpe Plain Horizontal, m.d.
No. 2-24 Cincinnati Plain Automatic, rise and fall, m.d.
3—24" Cincinnati Plain Hydromatic, m.d. in base
3—36" Cincinnati Duplex Hydromatic, m.d. in base
No. 4—36" Cincinnati Plain Hydromatic, m.d.
Model 33—1536 Sundstrand Simplex Fluid Screw Type Rigidmill, m.d.
No. 34—36 Cincinnati Semi-Special Plain Hydromatic, tracer control
28"x144" Cincinnati Plain Hydromatic, m.d., late
56-96 Cincinnati Plain Hydromatic, m.d. in base, 1944
56-72 Cincinnati Hydromatic Production, 1946
56-72 Cincinnati Duplex Hydromatic, 1941

PLANERS
30"x30"x8' table G. A. Gray Double Housing, belt drive
30"x30"x10' Cincinnati, belted m.d., 2 heads
36"x36"x8' Cincinnati, m.d., 2 heads on rail
36"x36"x10' Cincinnati Openside, D.C. reversing m.d.
36"x36"x12' Betts, m.d., 3 heads
36"x36"x12' G. A. Gray, 2 heads
36"x36"x18' table Cincinnati Double Housing, m.d.
36"x36"x20' table Cincinnati H.P. Double Housing, belted m.d.
36" widened to 42"x36"x20' Cincinnati, md., 2 rail heads, 1 side head
48"x48"x12' table Sellers "Power Flow" Double Housing, m.d.
48"x48"x18' Niles-Bement-Pond, 2 heads, belt
48"x48"x28' Cincinnati, reversing m.d., 4 heads
56"x42"x14' Cincinnati, belt drive, 2 heads

We carry an average stock of 2,000 machines in our 11 acre plant at Cincinnati. Visitors welcome at all times

THE EASTERN MACHINERY COMPANY

1002 Tennessee Avenue, Cincinnati 29, Ohio

MElrose 1241 "TWX" CI 174 **CABLE ADDRESS—EMCO**

ROLLING MILLS—STEEL WORKS EQUIPMENT

1—AUTOMATIC COOLING BED FOR BARS up to 2" dia. consists of run-in table, cascade section, shuffle bar section, runout table, with all electrics. 200 ft. long.
1—21" & 52" x 72" TANDEM COLD REDUCTION MILL, 4-high, 3 stands.
1—18" & 48" x 42" TANDEM COLD REDUCTION MILL, 4-High, 5-stands.
1—28" x 40" HOT STRIP MILL, 2-high, reversing, with 2500 HP D.C. motor generator, etc.
1—25" x 42" x 66" HOT STRIP MILL, 4-high.
1—16" x 22" COLD MILL, 2-high.
1—8" x 10" COLD MILL including uncoiler, recoiler and edging rolls.
2—28 3-HIGH ROLL STANDS.
1—New 16" BAR MILL, one 3-high roll stand, pinion stand.
1—New 12" BAR MILL, four 3-high stands, pinion stand.
1—12" MERCHANT BAR MILL with 18" roughing mill and heating furnace.
1—9" BAR MILL, 3-high.
2—MORGAN TRAVELING TILTING TABLES for 24" 3-high bar mill.
1—34" x 192" ROLL GRINDER.
2—65-TON ELECTRIC MELTING FURNACES, TOP CHARGE, with all electrical and mechanical equipment, including 15,000 KVA and 13,333 KVA transformers.
1—New top-charge ELECTRIC MELTING FURNACE with 2000 KVA transformer 13200 volts, 3 phase, 60 cycle.
1—ELECTRIC MELTING FURNACE, 1-ton, with 1000 KVA transformer.
2—PACK FURNACES for hot sheet mills 62" x 60', double chamber.
1—ROLL LATHE, ENCLOSED HEADSTOCK, up to 36" dia. rolls.
1—OPEN HEARTH CHARGING MACHINE, 5 ton capacity 11' track gauge.
1—SIDE TRIMMER, Streine, maximum width 48", makes 2 cuts 3/16" mild steel.
1—FLYING SHEAR FOR BARS, Morgan, up to 1½ square, moving at speeds up to 1800 FPM
1—SHUSTER STRAIGHTENING AND CUTTING MACHINE, cap. 1" rd.
1—UNITED HOT SAW, 50" dia. blade sliding frame, 4'8" stroke.
1—ROLLER LEVELER, McKay, rolls 80" face x 5¼ dia. with gear box and universal spindles.
1—PROCESSOR AND LEVELER, average gauge .109" 50" wide, 100 to 600 FPM.
1—DRAWBENCH, 30,000 lb., length 29 ft.
1—3000 HP GEAR DRIVE, ratio 500 to 73.7 RPM.
1—3000 HP GEAR DRIVE, ratio 500 to 95.8 RPM.
1—3000 HP GEAR DRIVE, ratio 16.2 to 1.
1—1200 HP GEAR DRIVE, ratio 5.82 to 1.
1—1200 HP GEAR DRIVE, 353 to 94.6 RPM, 3.73 to 1 ratio.
1—3500 HP MOTOR, 11000/6000 volts, 3 phase, 60 cycle, 514 RPM, synchroneus, never used.

FRANK B. FOSTER, INC.

2220 Oliver Building, Pittsburgh 22, Pa.
Cable: "Foster, Pittsburgh" Telephone Atlantic 1-2780

VARIABLE VOLTAGE DRIVES

3 PHASE 60 CYCLE

Quan.	Size	Description
2	3000 HP	DC MOTORS—525 V., 600 RPM, Whse. M.G. Sets—2500 K.W. Whse., 2300/4160 V.
1	2750 HP	DC MOTOR 450 V. 300 RPM Elliott 2200 K.W., Gen. Elec. 3 unit 450 V DC Gen. with 3000 H.P. 720 RPM, 2300 V. AC Motor and Exc.
1	2250 HP	DC MOTOR 600 V. 400/500 RPM. G.E. M.G. Set—2000 K.W. G.E. AC Motor—2300 V.
1	1500 HP	DC MOTOR 600 V. 680 RPM Whse. M.G. Set. 1500 KW G.E. 11000 V.

For listing of Motors, Generators, Transformers, M.G. Sets, Rectifiers, Mill Motors, etc. See last week issue.

Write — Phone — Wire

BELYEA COMPANY, Inc.
47 Howell St., Jersey City, N. J.
Tel. Oldfield 3-3334

WAA
SENECA FALLS
"LO-SWING" LATHE

8" x 108" CENTERS
Serial #LB4721 — 25 H.P. Motor

PROCTOR & SCHWARTZ, INC.
7th St. & Tabor Rd., Philadelphia 20, Pa.

CLEANING EQUIPMENT

For plant maintenance and tank cleaning, hot "jet stream" cleaning, with Sellers Hydraulic Jets. Send for Bulletin 424-B.

SELLERS INJECTOR CORP.
1606 Hamilton Street, Philadelphia 30, Pa.

PRESSES AND SHEARS

14,000 T Mesta Steam Hydr. Forging Press
5,000 T Mesta self cont'd Oil Hydr. Forging Press
3,000 T. United Eng. Steam Hydr. Forging Press
ALL NEW in 1943—Good condition
Cincinnati ¾" cap. x 16' Press Brake, 1942
#5 Long & Alstatter Double End Punch & Shear
7" Round Pels Guillotine Billet Bar Shear
Just out of service

EVEREADY—BPT., CONN.—BOX 638—ED 4-9471-2

WORLD'S LARGEST STOCK
STAMPING PRESSES

SQUARING SHEARS • PRESS BRAKES
REBUILT *and* GUARANTEED

WILL LEASE WITH OPTION TO PURCHASE, OR WILL FINANCE OVER LONG TERM

JOSEPH HYMAN & SONS
TIOGA, LIVINGSTON & ALMOND STS.
Philadelphia 34, Pa. Phone GArfield 3-8700

FOR SALE

COMPLETE STRIP ROLLING MILL

Late Type, Still Set-Up In Plant

BLISS 4 Stand Tandem, continuous strip mill, rolls 16" diameter x 24" face. Individual 250 h.p. D.C. variable speed motors & controls. Equipped with motor driven recoiler.

NATIONAL MACHINERY EXCHANGE
126 Mott St. New York 13, N. Y.
CAnal 6-2470

500 TONS OF UNUSED 100# ARAA RAIL IN STOCK
ATTRACTIVE PRICE QUOTED

M. K. FRANK
480 Lexington Ave. New York 17, N. Y.
401 Park Bldg., Fifth Ave. Pittsburgh 22, Penna.

OFFERING

BRIDGE CRANES

ARNOLD HUGHES COMPANY
2765 Penobscot Bldg. Detroit, Mich.
WOodward 1-1894

OVER 1,000 NEW AND USED MACHINE TOOLS IN STOCK
WRITE FOR LATEST STOCK LIST

MILES MACHINERY COMPANY
2041 EAST GENESEE • SAGINAW, MICH. PL. 2-3105

FOR SALE

14 ton Brookville, standard gauge, diesel switching locomotive, 6 miles 56# relaying rail with angle bars, all uniform section and drilling

Wire, write or telephone Dickens 3-9508

Midwest Steel Corporation
510 Capitol Street, Charleston, West Virginia

Complete stocks relaying rail and track materials at various warehouse locations.

FOR SALE OR RENT

DIESEL LOCOMOTIVE CRANES

(2) 25 Ton Orton w/Cat. D13,000
(4) 30 Ton Ohio w/Cat. D13,000
(1) 30 Ton Browning w/Cat. D13,000
(2) 35 Ton Ohio w/Cat. D13,000
(1) 40 Ton Orton w/Cat. D17,000

UNUSED DIESEL ELECTRIC SELF PROPELLED 50 PASSENGER RAIL COACHES
SELLERS 57 FOOT PLATE EDGE PLANER, MFG. 1941

ALBERT HELLER
87 HAMILTON AVE. BROOKLYN 31, N. Y.
ULSTER 5-8643

24" x 28' Hendey Geared Head Lathe, M.D. 22'5" Centers.
62" King Vert. Boring Mill, R.H. Swivel Head, L.H. Turret Hd., Side Hd., M.D.
5' x 3/16" Beloit Initial Bending Roll M.D.
No. ½, No. 1½ Buffalo Univ. Ironworkers, M.D.
600 Ton Southwark Hyd. Inclined Wheel Press

FALK MACHINERY COMPANY
16 Ward St., Baker 5-5887, Rochester 5, N. Y.

Locomotives & Locomotive Cranes

1—25 Ton Diesel Electric Locomotive
1—45 Ton G. E. Diesel Electric Locomotive
1—25 Ton Ohio Diesel Locomotive Crane
1—30 Ton Browning Diesel Locomotive Crane
1—25 Ton Bay City 190T61 Truck Crane

B. M. WEISS COMPANY
Girard Trust Bldg. Philadelphia 2, Pa.

LOCOMOTIVES AND LOCOMOTIVE CRANES

25 T. Diesel Elect. Whitcomb Loco., new
45 T. Diesel Elect. Whitcomb Loco., br. new
45 T. Diesel Elect. Porter Loco., new 1941
50 T. Diesel Elect. Atlas Loco., new 1940
25-30 T. Cat. Diesel Ohio Loco. Cranes, New '42
30-40 T. Cat. Diesel Orton Loco. Cranes

EVEREADY—BOX 638—BPT., CONN.—ED 4-9471-2

MEEHANITE® METAL CASTINGS

ROUGH OR MACHINED
ONE TO 60,000 POUNDS
FOR
STRENGTH — ABRASION
CORROSION OR HEAT

ROSEDALE
FOUNDRY & MACHINE CO.
1735 PREBLE AVE., PITTSBURGH 33, PA.

DROP FORGINGS
To Your Specifications
Prompt Quotations
BALDT ANCHOR CHAIN & FORGE DIVISION
P. O. Box 350—Chester, Pennsylvania

OLSON
SCREW MACHINE PRODUCTS

Made to your specifications and tolerances. From smallest up to 2⅝" diameter in steel, brass and aluminum.

OLSON MANUFACTURING CO.
101 Prescott St., Worcester, Mass.

K
SINCE 1895

DROP FORGINGS
Small drop forgings up to one pound in size. Inquiries invited for very prompt action.

KEYSTONE FORGING COMPANY
Northumberland Pennsylvania GReenwood 3-3525

Serving you since '82
CONTRACT STAMPING
ASSEMBLIES
SUB-ASSEMBLIES
FINISHING
From print or sample
★
DESIGN AND DEVELOPMENT
★
TOOL AND DIE MAKING
★
HUEBEL MFG. CO., INC.
Kenilworth 3, New Jersey

PIT-MOLDED CASTINGS
. . . a specialty in our MEEHANITE foundry. We can handle any size casting from 5 to 26,000 pounds, rough or machined to your specifications. (MEEHANITE properties lie between cast iron and steel.)

Our shops are also equipped for:
- LARGE PATTERN MAKING
- HEAVY PLATE STEEL FABRICATION
- MACHINE SHOP FACILITIES
- PRODUCTION AND ASSEMBLY OF CUSTOM-BUILT MACHINERY

HARDINGE MANUFACTURING CO.
240 Arch Street York, Pennsylvania
Phone 33821

Nepsco
NEW ENGLAND PRESSED STEEL COMPANY
Contract Manufacturer since 1914
METAL STAMPINGS
SPECIALTIES — APPLIANCES
For Industrial and Domestic Users
P. O. BOX 29
NATICK MASSACHUSETTS

DROP FORGINGS
Special Forgings—High Quality, Fast Delivery
For prompt attention phone or send prints to John Bello.
CARCO INDUSTRIES, INC.
7341 Tulip Street, Phila. 35, Pa.
DEvonshire 2-1200

THE FORMULA:
Multi-operation presses
plus
Yankee skilled workmen
over
Eighty years manufacturing
know-how equals
Low cost metal stampings
And precision assemblies
To meet your needs
The GREIST MANUFACTURING CO.
646 Blake St., New Haven 15, Conn.

SPECIAL MACHINERY
DIAMITE *Abrasive Resistant* Castings
NI-RESIST *Heat & Corrosion Resistant* Castings
P M G BRONZE *High Strength Acid Resistant* Castings
Fully Equipped—Pattern Foundry & Machine Shop Facilities—Castings to 15 tons
Weatherly Foundry & Mfg. Co., Weatherly, Pa.

DROP FORGINGS
Special Forgings of Every Description.
We solicit your prints or model for quotation.
Wilcox Forging Corporation
Mechanicsburg Penna.

Special Washers
We carry in stock Silicon killed steel specially suited for case-hardening. Stock dies for producing washers from .0015 to ½" thick.
Thomas Smith Company
394 Grove St., Worcester, Mass.

EQUIPMENT AND MATERIALS WANTED

SURPLUS STEEL
NEW *WANTED* USED
Structurals, Plate, Pipe and Tubing
Consumers Steel & Supply Co.
P. O. Box 270, RACINE, WISCONSIN

WANTED
BRIDGE CRANES
ARNOLD HUGHES COMPANY
2765 PENOBSCOT BLDG. DETROIT, MICH.
WOodward 1-1894

WANTED
SURPLUS STEEL
WALLACK BROTHERS
7400 S. Damen Ave. Chicago 36, Illinois

WANTED
Tools, hi-speed, moly, stellite, tantung, carbide, etc. New, used or scrap.
C. B. GOODMAN & CO.
5826 S. Western Ave. Chicago 36, Illinois
Grovehill 6-8200

SELL US YOUR SURPLUS STEEL BARS, PLATES, STRUCTURAL SHAPES, CHAIN FITTINGS, MISSING LINKS, ETC. ROCKWELL ENGINEERING CO., BLUE ISLAND, ILLINOIS.

WEISS STEEL CO. INC.
600 WEST JACKSON BLVD.
CHICAGO 6, ILLINOIS
Buyers of Surplus Steel Inventories
39 Years of Steel Service

EMPLOYMENT EXCHANGE

HELP WANTED

OWEN SWANSON
PERSONNEL PLACEMENT
CONSULTING SERVICES
135 Pine Ave. S.E.
Warren, Ohio

Sales Mgr., Ferrous & Non-Ferrous, Met. Deg.	$15,000
M. E. Design, Arch. Bkg., 10 yrs. exp. Rolled Form	$12,000
M. E. Tool Design—Rolled Forms & Die.	$ 9,000
E. E., Motor Design & Test, ¼ to 50 h.p.	$ 8,500
M. E., Design Rolled Forms, Tubing	$ 8,400
Metallurgist, Adv. Deg., Exp. not nec.	$ 8,400
Metallurgist, Customer Svc., Non-Ferrous	$ 7,800
Metallurgist, Customer Svc., Ferrous	$ 7,800
M. E., Project, High Production Metal Fab.	$ 7,200
3 Metallurgists, recent grads.	$ 6,600

All Resumes Confidential
Total of 25 Years Successful Industrial Managerial Experience

EMPLOYMENT SERVICE

HIGH GRADE MEN—Salaries $5,000 to $25,000. Since 1915 thousands of Manufacturing Executives, Engineers, Sales Managers, Comptrollers, Accounts, and other men of equal calibre have used successfully our confidential service in presenting their qualifications to employers. We handle all negotiations. Submit record with inquiry. The National Business Bourse, 20 W. Jackson Blvd., Chicago.

SITUATION WANTED

MELTING SUPERINTENDENT, ELECTRIC FURNACES. Age 43, BS Met. Engr., 17 years experience melting stainless, high alloy, aircraft and other grades of high quality steel. Proven ability to organize and direct all phases of steel production. Address Box G-810, Care *The Iron Age*, Chestnut & 56th Sts., Philadelphia 39.

SUPERINTENDENT. Experienced in all phases of planning and coordinating plant production. Structural steel and welded steel products background. Age 41. College training. Address Box G-844, Care *The Iron Age*, Chestnut & 56th Sts., Philadelphia 39.

The IRON AGE
Chestnut & 56th Sts., Philadelphia 39, Pa.

Please send me rates and general information about the Clearing House Section without obligation on my part.

Name ..... Title .....

Company .....

Street .....

City ..... Zone .... State .....

An asterisk beside the name of advertiser indicates that a booklet, or other information, is offered in the advertisement.

A

Acme Steel Co. 184
*Acme Welding Div. of The United Tool & Die Company ... 138
Aetna Life Insurance Company .. 78
*Aldrich Pump Co. 13
*Allen-Bradley Co. .....145 & 146
Allis-Chalmers Mfg. Co. Engine-Material Handling Div. 139
Aluminium Limited Sales Inc..42 & 43
American Brass Co., The 61
*American Steel Warehouse Association 70
American Steel & Wire Div., United States Steel Corp. 55, 56, 57 & 58
*American Welding & Mfg. Co., The 142
*Apex Machine & Tool Co. 16
*Associated Spring Corp. 60

B

*Babcock & Wilcox Co., The Refractories Division 73
Babcock & Wilcox Co., The Tubular Products Div. 4
Baldt Anchor, Chain & Forge Div. 181
*Barnes, Wallace Steel Div., Associated Spring Corp. 60
Bay State Abrasive Products Co. 22 & 23
Bearings, Inc. 92
Belyea Co., Inc. 180
Benchmaster Manufacturing Co. 117
Bethlehem Steel Co. 1, 17, 18, 19 & 20
Blaw-Knox Co., Foundry & Mill Machinery Division 53
*Bliss, E. W. Co., Rolling Mill Division 71
Bliss & Laughlin, Inc. 101
Bower Roller Bearing Division ..Federal-Mogul-Bower Bearings, Inc. 105
*Bridgeport Brass Co. 88
Bristol Brass Corp., The 66
*Brush Instruments Division of Clevite Corporation 33
Bullard Co., The 102
Byers, A. M. Co. 87

C

Carco Industries, Inc. 181
Carpenter Steel Co., The ....38 & 39
Carpenter Steel Co., The Alloy Tube Division 158
*Chambersburg Engineering Co... 176
Cincinnati Milling Machine Co., The, Special Machine Division.. 106
Colorado Fuel & Iron Corp., The Wickwire Spencer Steel Div..34 & 35
Columbia-Geneva Steel Div., United States Steel Corp. 55, 56, 57 & 58
Columbia-Southern Chemical Corp. 122
Consumers Steel & Supply Company 181
Copperweld Steel Co., Ohio Seamless Tube Division 46
Crucible Steel Co. of America 52 & 151
Curry, Albert & Co., Inc. 179

D

*DeLaval Steam Turbine Co. 26
*Diamond Manufacturing Co. ... 11

E

Eastern Machinery Co., The 179
ElectroLift, Inc. 176
Erie Forge & Steel Corporation.. 69
Eveready Supply Co. 180
Ex-Cell-O Corporation Inside Front Cover

F

Falk Machinery Co. 180
*Farrel-Birmingham Co., Inc. ... 113
*Farval Corporation 80
*Foote Mineral Co. 149
*Formed Steel Tube Institute, Inc. 135
Foster, Frank B., Inc. 180
Foundry & Mill Machinery Div., Blaw-Knox Co. 53
Frank, M. K. 180
Frasse, Peter A. & Co., Inc. 161

G

*Garlock Packing Co., The 27
*Gerotor May Corporation 116
*Gisholt Machine Co. 65
Goodman, C. B. & Co. 182
*Goodrich, B. F., Industrial Products Company 5
Goss & DeLeeuw Machine Co. ... 183
Gray, G. A. Company .....28 & 29
Greist Manufacturing Co., The .. 181
*Gulf Oil Corporation.....36 & 37

H

Hardinge Mfg. Co. 181
Haynes Stellite Company Division of Union Carbide Corp. ..136 & 137
*Hendrick Manufacturing Co. ... 40
Henry, A. T. & Company, Inc. ... 179
*Hooker Chemical Corporation .. 63
Huebel Mfg. Co., Inc. 181
Hughes, Arnold Co. .....180 & 182
Hussey, C. G. & Co. 141
Hyman, Joseph & Sons 180

I

Inland Steel Co. 8
Innocenti Corporation .....50 & 51
*International Nickel Co., Inc., The 64
Iron & Steel Products, Inc. 178

J

*Jones & Lamson Machine Co. .. 152
Jones & Laughlin Steel Corporation .....76 & 77
Jones & Laughlin Steel Corp., Stainless & Strip Division 90

K

Keystone Forging Company 181
Kingsbury Machine Tool Corp. .. 114
Krieg, Victor J., Inc. 117

L

*L & J Press Corp. 156
Lang Machinery Co., Inc. 179
Lincoln Electric Co. 165
*Link-Belt Co. 41
Luria Bros. & Co., Inc. 167

M

MacCabe, T. B. Co. 178
Messinger Bearings Incorporated 54
Metallurgical Products Department of General Electric Company 14
Midwest Steel Corp. 180
Miles Machinery Co. 180
Milford Rivet & Machine Company, The 157

N

NRC Equipment Corporation.... 147
*National Conveyors Company, Inc. 68
National Machinery Exchange ... 180
National Business Bourse 182
*National Steel Corp. 12
National Tube Div., United States Steel Corp. .....55, 56, 57 & 58
New England Pressed Steel Co. .. 181
Norton Company, Abrasive Grinding Wheel Division ...30 & 31

O

Ohio Seamless Tube Div. of Copperweld Steel Co. 46
Oliver Corp., The, A. B. Farquar Division 155
Olson Manufacturing Co. 181
Osborn Mfg. Co., The, Brush Division 118

P

Pangborn Corp ....Inside Back Cover
*Pascagoula Works, Refractories Division, H. K. Porter Company, Inc. 108
*Pennsalt Chemicals Corporation 21
Platt Bros. & Co., The 183
Porter, H. K., Company, Inc. 108
Proctor & Schwartz, Inc. 180

R

*Republic Steel Corp. .....24 & 25
*Rhode Island Tool Co. 153
*Roebling's, John A. Sons Corp. 67
Rosedale Foundry & Machine Co. 181
Ryerson, Jos. T. & Son, Inc. 6

S

SKF Industries, Inc. 75
*Selas Corp. of Ame.rica....48 & 49
Sellers Injector Corp. 180
*Shepard Niles Crane & Hoist Corp. 15
Ship Supply Corp. 180
Simonds Abrasive Co. 59
*Simonds Gear & Manufacturing Co., The 155
Smith, A. O. Corporation ..120 & 121
Smith, Thomas Co. 181
*Spencer Turbine Co., The 150
Steel & Tube Div., The Timken Roller Bearing Co. ....Back Cover
Struthers Wells Corporation, Titusville Forge Division 179
Swanson, Owen, Personnel Placement 182

T

Tennessee Coal & Iron Div., United States Steel Corp. 55, 56, 57 & 58
*Textile Machine Works .....44 & 45
Timken Roller Bearing Co., The, Steel & Tube Division ..Back Cover
*Tinnerman Products, Inc. 10
*Titan Metal Manufacturing Company 117
*Trent Tube Co., Subsidiary of Crucible Steel Company of America 52
Tubular Rivet & Stud Company .. 110

U

Udylite Corp., The 74
Union Carbide Corp., Haynes Stellite Division ..136 & 137
United States Steel Export Co. .....55, 56, 57 & 58
*United States Steel Corp. 55, 56, 57 & 58
United States Steel Supply—Steel Service Centers Div., United States Steel Corp. ..55, 56, 57 & 58
Universal-Cyclops Steel Corporation 62

V

*Voss Engineering Co. 72

W

*Wagner Electric Corp. 47
Wallack Bros. 182
Waterbury-Farrel Foundry & Machine Co. 32
Weatherly Foundry & Mfg. Co. ... 181
*Weirton Steel Co. 12
Weiss, B. M. Co. 180
Weiss Steel Co., Inc. 182
Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp. 34 & 35
Wilcox Forging Corp. 181
Wyckoff Steel Co. 140

Y

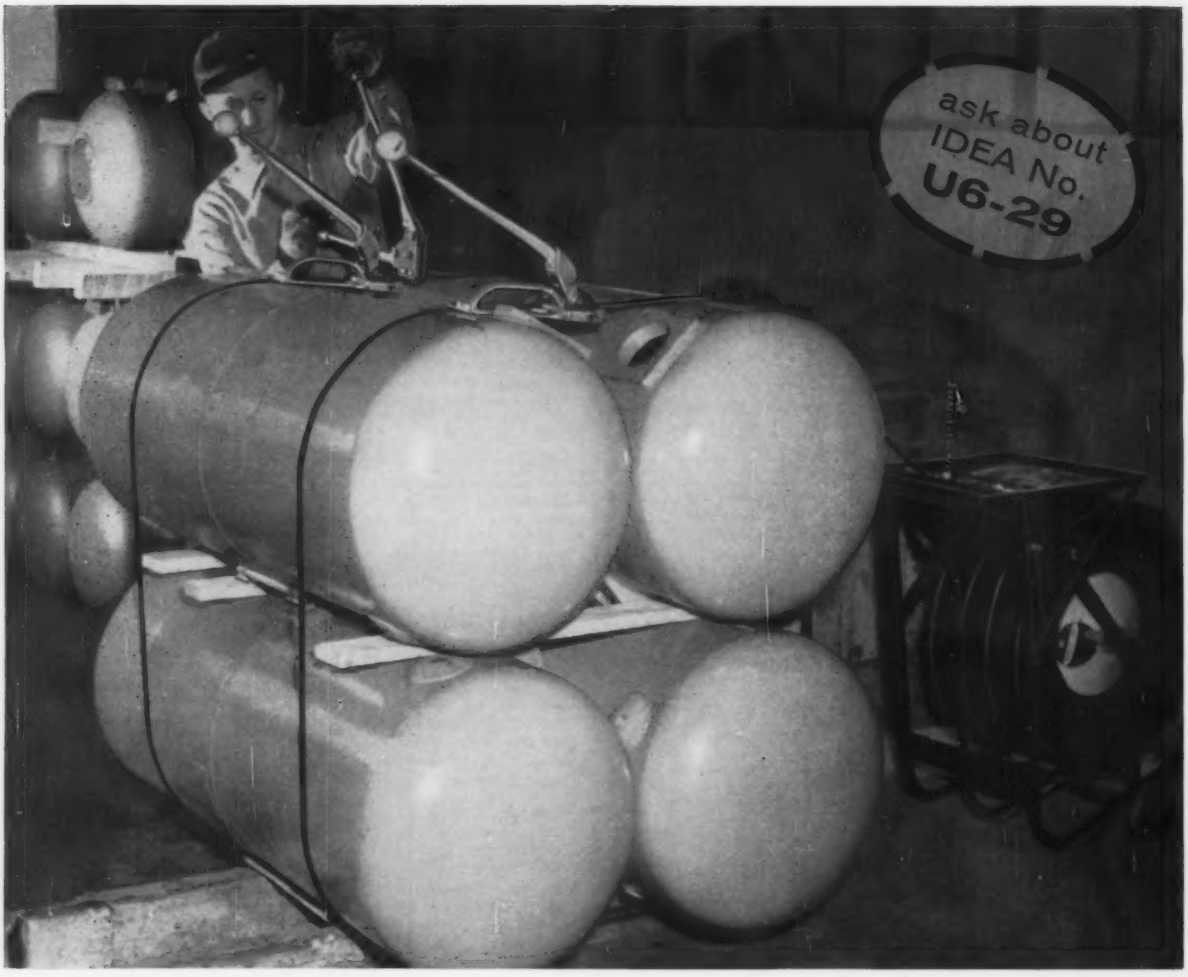
Youngstown Foundry & Machine Co., The 119

CLASSIFIED SECTION

Clearing House 178-180
Contract Manufacturing 181
Employment Exchange 182
Equipment & Materials Wanted.. 182

GOSS and DE LEEUW
MULTIPLE SPINDLE
CHUCKING MACHINES
Four, Five, Six, Eight Spindles • Work and Tool Rotating Type
GOSS & DE LEEUW MACHINE CO., KENSINGTON, CONN.

Z I N C
STRIP AND WIRE
•
ZINC METALIZING WIRE
•
ZINC ACCURATELY ROLLED
for electric fuse elements
THE PLATT BROS. & CO., WATERBURY 20, CONNECTICUT



Use your AIM* . . . Pressed Steel Tank Co. does . . .

Unitizing reduces tank damage 75%

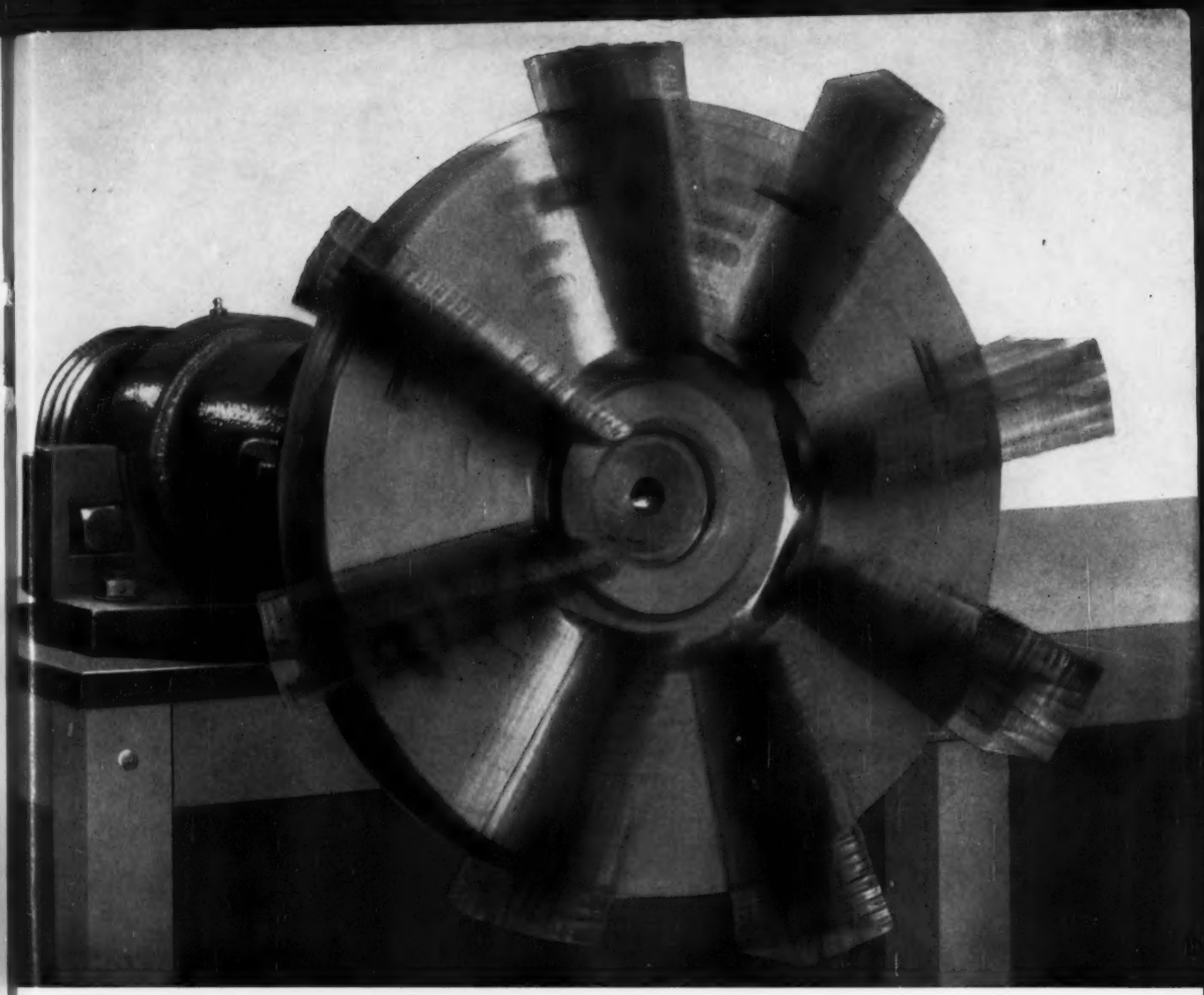
PRESSED STEEL TANK COMPANY, MILWAUKEE, WISCONSIN, cut damage claims 75% by using heavy-duty Acme Steel Strapping to unitize steel tanks. Working with their Acme Idea Man, a system was developed to strap tanks in units of four for fast handling and safe shipment. (Idea U6-29)

Acme Idea Man E. O. Schroeder worked with Pressed Steel Tank Company to devise unitizing methods.

Unitizing protects tank finish and prevents damage to exterior fittings. Tanks are held securely in position during shipment. This unitizing method also increases plant efficiency: although a strapping crew has been added, overall handling costs are less. Now the unitized tanks are handled entirely with mechanical equipment. Inventory control is simplified and storage space is more efficiently utilized. Customers appreciate improved arrival condition, too!

***Use your Acme Idea Man.** Problem solving in product handling and shipping is his business. Call him at the nearest Acme Steel office. Or write Dept. IFU-29, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Ltd., 743 Warden Ave., Toronto 13, Ontario.

ACME STEEL **STEEL STRAPPING**



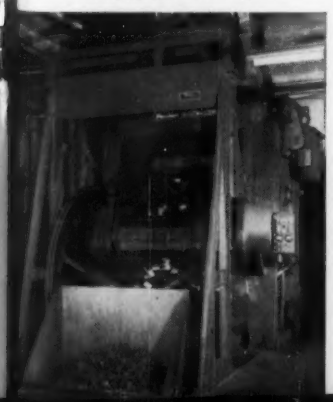
"Rotoblasting" a profit pattern

Pangborn Rotoblast Wheel gives you minimum blast cleaning costs.

This cutaway view of power-in-motion spells *efficiency* . . . the efficiency of Pangborn Blast Cleaning Machines.

The Pangborn-developed central impellor design makes possible high abrasive discharging capacity at high efficiency. Up to 160,000 lbs. of abrasive an hour can be efficiently handled by these Rotoblast Wheels. Service ease and reliability are assured by Pangborn vane locking design. Permanent factory alignment of running parts and bearings, plus the lubrication system, permit wheel spindle mounting at any angle. It is this kind of engineering—whichever size Rotoblast Wheel *your* Blast Cleaning Machine needs—that lowers cost by giving you maximum production with a minimum of maintenance.

Pangborn Blast Cleaning Barrel—one of a complete line of Pangborn machines utilizing the cost-cutting principle of Rotoblast cleaning.



The Pangborn Engineer in your area will be glad to go to work on your cleaning problem at no obligation. And for complete information on Pangborn Rotoblast Wheels, write to Pangborn Corp., *1500 Pangborn Blvd., Hagerstown, Md., Manufacturers of Blast Cleaning and Dust Control Equipment.*

Pangborn cleans it fast with ROTOBLAST

How to squeeze more production from your automatic forging equipment

...at no extra cost

AUTOMATIC forging machines are no better than the uniformity of the steel you process. When structural or chemical changes occur in the steel you're using you have to interrupt operations to adjust your equipment. And you lose the continuous production you paid for!

You can avoid these interruptions by using uniform steel. Timken® electric furnace fine alloy steel, for instance. It's uniform from bar to bar, heat to heat, order to order.

We take many extra quality-control steps to make sure it's uniform—many of them were American steel industry "firsts". For example, our magnetic stirrer for molten steel assures equal distribution of alloys, uniform temperature and working of the slag. A direct-reading spectrometer insures exactly correct composition to the very moment a heat is tapped. And individual order-handling assures uniformity that meets your own end-use requirements.

You'll squeeze the most production from your automatic forging equipment, at no extra cost, by specifying Timken fine alloy steel. You'll get uniform steel and faster, continuous production. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable: "TIMROSCO".

TIMKEN *Fine Alloy* STEEL

TRADE-MARK REG. U. S. PAT. OFF.

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS STEEL TUBING